

Computer technology rides high during Mars mission. Pages 28 and 53

The Web? Who's got the time? Some people outsource their surfing and get the digest version later. The Internet, page 41

COMPUTERWORLD

The Newsweekly for Information Technology Leaders
News updates, features, forums: www.computerworld.com
July 14, 1997 • Vol. 31 • No. 28 • 110 pages • \$3/Copy \$48/Year

Enough is enough!

► Key corporate accounts vow to phase out Macs

By Kim Girard

THE SEEMINGLY impossible has happened. Some key, hard-core Apple users said they are

finally giving up the ghost after the troubled company last week ousted Chairman and CEO Gilbert F. Amelio — just 17 months after he vowed that

Apple Computer, Inc.'s problems were "definitely fixable."

In interviews last week with *Computerworld*, a half-dozen corporate Apple users, with more than 10,000 Macintosh seats, said they are phasing out or expect to drastically reduce the number of Macintoshes they use over the next several years.

For them, Amelio's departure is the final nail in Apple's coffin. As the company floundered

Enough! page 16

Apple inside

Time line

Apple stumbles its way out of the corporate user picture, page 16

How bad is it?

Somber stats paint a bleak picture, page 16

Ex-CEOs on parade

A history of musical chairs in capricious Cupertino, page 16

Misery loves company

Borland users await latest strategy from Apple alum Del Yokum, page 17

Win 95 users to get NT nudge

By Laura DiDio and April Jacobs

THE PUSH IS ON — well, almost.

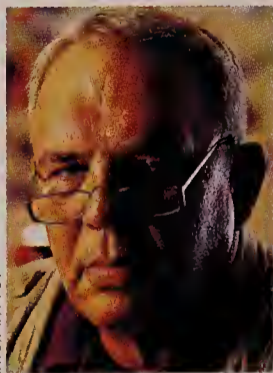
When Windows NT 5.0 ships sometime next year, Microsoft Corp. will launch a full frontal assault to upgrade enterprise customers from Windows 95 to NT Workstation on the desktop, according to company executives.

Such a migration from Windows 95 to NT 4.0 isn't feasible today because of incom-

patibilities between the two operating systems. But NT 5.0 will address most of those issues.

In interviews last week, a dozen Fortune 1,000 users said they are already planning a gradual transition to NT Workstation 5.0 and will do so willingly, provided Microsoft delivers a smooth upgrade path.

"Microsoft's decision to go with Windows NT as its corporate operating system isn't surprising. But NT nudge, page 98



NASA's J. Briscoe Stephens is concerned about availability of applications

Suite enticement: CA to give away management tools

By Patrick Dryden

AT THIS WEEK'S CA-World '97 user conference, Computer Associates International, Inc. will push for the widespread adoption of Unicenter TNG by giving away the underlying parts as a framework.

Some analysts predicted that CA's surprisingly bold strategy could slash the cost and complexity of managing far-flung client/server systems.

CA, page 98

Internet flames scorch businesses

"Tommy Hilfiger makes racist comments on Oprah." "Beware of GE microwaves." "Disney is antifamily." Everywhere you look on the Internet, someone is bad-mouthing a company or product — maybe even yours. Cyberspace is full of false rumors, misinformation and diatribes from disgruntled consumers. Companies that don't monitor this Internet traffic and respond deftly may be headed for a public relations disaster. McDonald's and Ford, for example, found that repairing a 'net-damaged reputation can cost millions.

In Depth, page 75



Prices are continually dropping, but PC and laptop users say they're paying too much for too little. The main culprits, according to *Computerworld's* Customer Satisfaction Survey, are IBM, Compaq and Digital. The winners in the survey of 1,651 users are Hewlett-Packard, Dell, Gateway 2000 and Micron. Complete survey results are in **Buyer's Guide**, page 66.





Our Pride and Joy





Jessica Lowe is a "newbie with attitude." Like fellow 1996 IS grads, she's ambitious, savvy and wants it all, now. IT Careers, Page 80

Hennie Ijpelaar rode a roller coaster while installing SAP R/3 at his Dutch amusement park. Software, page 53

In this issue

NEWS

- 2 A third party swoops** into virtual storage with a disk array that supports IBM and StorageTek machines.
- 3 Netscape repackages SuiteSpot**, makes management of servers easier.
- 4 AOL deal marks** the end of the era when firms could go online cheaply—think location, location, location.
- 6 Microsoft readies Osmium** version of Exchange, but it's still missing key features.
- 8 Shipping company dumps** closed WAN and links Singapore to New Orleans via the Internet.
- 12 Hackers claim** they increase 'net security at strained meeting with IS managers worried about teen-age "crackers."

OPINION

- 33 Congress must repeal** restrictions on IS consultants, Steven Lipson and Harvey Shulman contend.
- 62 Manage money better** to reduce total ownership costs in IS, Paul Strassmann advises.

TECHNICAL SECTIONS

CORPORATE STRATEGIES

- 37 Point-of-sale systems** are old hat at most retailers, but at ballparks, they're leading-edge and paying off.
- 37 Cooperative eases red tape** and financial burden on independent IS consultants.
- 37 UN project spreads** best-practices information to poverty fighters worldwide.

THE INTERNET

- 41 Web surfers off-load** research time to firm that gathers, digests and analyzes online info.
- 41 Defense agencies sign** \$50 million deal to buy software electronically, saving millions.

THE ENTERPRISE NETWORK

- 47 Users seek to consolidate** directory information, but multiple incompatible systems hamper their best efforts.
- 47 Developing API promises** to let users monitor how fast specific functions in custom software responds.

SOFTWARE

- 53 NASA developers use** Java to get Mars pictures to scientists and the public.

SERVERS & PCs

- 55 Bank solves storage problem** with difficulty as it moves some functions off mainframe.
- 55 GM tests wearable**, voice-controlled computer to help mechanics repair complex cars.

FEATURES

MANAGING

- 59 Sleazy operators slink out** of the woodwork with scams around the year 2000 problem.
- 61 Millennium conversions strike fear** into IS. We have news and tips to help.

BUYER'S GUIDE

- 66 Users are annoyed** by what they get for their money, according to survey that lauds HP, slams IBM and Compaq.

IN DEPTH

- 75 Internet misinformation causes** corporate PR headaches.

ETC.

Company index	97
Editorial/Letters	32
How to contact CW	97
Inside Lines	100
Stock Ticker	96

Compaq cuts prices, offers build-to-order

By April Jacobs
NEW YORK

COMPAQ COMPUTER CORP. is slashing desktop prices by as much as 22% and moving to a cost-saving, build-to-order manufacturing system.

Houston-based Compaq also is putting more feet on the street to sell into corporate accounts. It will use salespeople from Tandem Computer Corp. in Cupertino, Calif., which Compaq is merging with.

Compaq's moves are a response to inroads made by Dell Computer Corp., a lower-priced rival. Dell uses a cost-effective, direct-sales approach.

"Compaq's customers are going to like the lower prices, and in theory they aren't going to see anything different. So in terms of price and performance, they're going to like it," said Roger Kay, an analyst at International Data Corp. in Framingham, Mass.

For example, Compaq's Deskpro 2000 entry-level PC will cost \$999, a 16% reduction. It features a 166-MHz Pentium processor, a 1.2-G-byte hard drive and 16M bytes of memory.

Compaq last week rolled out 13 new Deskpro 2000 and 4000 models, which will be the first offered in the build-to-order program. That will let users choose from a variety of standard configurations that will be built at Compaq's factory as soon as the order is placed. By year's end, the company expects to be able to fill orders within five days, compared with up to several weeks now if products aren't available from resellers.

In theory, build-to-order will let Compaq cut its costs by reducing the amount of inventory resellers hold.

Users will place orders as they always have, through resellers and Compaq sales representatives. And the machines will still be delivered through Compaq's resellers.

"Whether they're going to be able to meet Dell's prices over the longer term is a question, because Dell's been very quiet," Kay said.

"I think what this does is to drive

another stake into the heart of the traditional reseller channel," said Brian Brumit, a director at Coopers & Lybrand LLP in Hartford, Conn., and a Compaq customer.

But Brumit said the move could be difficult for Compaq as it tries to essentially provide both in-stock computers and build-to-order models through the reseller channel.

The company also will offer financing and leasing to customers later this summer. Configured-to-order machines, which are highly customized, will be offered in the third quarter.

"I don't understand what exactly the value-add proposition here is for the resellers," Brumit said.

Compaq's plan to increase sales and reduce costs:

- Build-to-order now
- Configure-to-order desktops later this year
- Up to 22% price cuts on Deskpro PC line
- Double its sales and services staff from 4,000 to 8,000 worldwide

Brumit's sentiments were echoed by three analysts at Nikko Research, Inc. in New York. They said the move would please customers, who would like the lower prices, but might cause pain for smaller resellers unable to make enough profit from selling Compaq machines.

Compaq CEO Eckhard Pfeiffer said the company's plans shouldn't cause the same type of confusion and anger that occurred earlier this year among resellers when it first announced its plans to alter its distribution model.

Compaq's sales grew to \$5 billion for the second quarter of 1997, which ended June 30, 1997. That was an increase of 25%, compared with the same quarter last year.

The new plan has been modified in several ways. The company hasn't committed to having resellers assemble any hardware on site and has softened statements that implied it would sell directly to some large accounts. □



Gateway Solo™ Portable PCs

- 11.3", 12.1" or 13.3" Screens
- Intel Pentium® Processors or Pentium® Processors with MMX™ Technology
- Hard Drives (up to 3GB on some models)
- Modular Design Accommodates Many Storage Options
- CD-ROM & 3.5" Diskette Drives or Combination Drive Available On Some Models
- EZ Pad® Pointing Device & Full-Size MS® Windows® 95 Keyboard
- Pre-loaded with Microsoft® Windows 95
- Gateway Gold™ Service and Support for Portable PCs
- Docking and Mini Docking Stations Available (sold separately)

Prices starting at \$1899

The Gateway Solo 9100 multimedia notebook received the Best Portable of COMDEX/Spring '97 award from BYTE magazine.

Gateway E-Series PCs

- Intel Pentium, Pentium Processors with MMX Technology, Pentium® Pro or Pentium® II Processors
- High-Performance SCSI, EIDE or Ultra ATA Hard Drives
- 2-D or 3-D Video Adapters and Monitor Options
- Pre-installed High-Bandwidth Network Options
- Low Profile, Desktop or Mid-Tower Case
- Pre-loaded with MS Windows 95 or Windows NT® Workstation 4.0
- Hardware Management Features
- Desktop Management Interface (DMI) 1.1 Compliant
- Gateway Gold Service and Support for Desktop PCs

Prices starting at \$1379

Gateway Destination™ Business PC/TVs

- Intel Pentium or Pentium II Processors
- Destination 31" VGA Monitor
- STB® 2MB Graphics Accelerator with Cable-Ready TV Tuner
- Storage Options Include Hard Drives up to 6.4GB, 12X min/24X max CD-ROM and ZIP™ Drives
- Boston Acoustics® MicroMedia™ 3-Piece Speakers
- 3Com® PCI 10/100 Twisted Pair Ethernet Adapter
- Wireless Keyboard with Integrated EZ Pad Pointing Device
- Wireless Field Mouse® Remote with Integrated Trackball
- Pre-loaded with MS Windows 95
- Gateway Gold Service and Support for Destination Systems*

Prices starting at \$2999

The Gateway family of business PCs is growing. Each member works toward one common goal:

making your business run smoother, more efficiently. To help tailor systems and services that meet your

unique demands, we created

Gateway 2000 Major Accounts, Inc.

Gateway Major Accounts offers you

a complete line of

GATEWAY™ desktops,

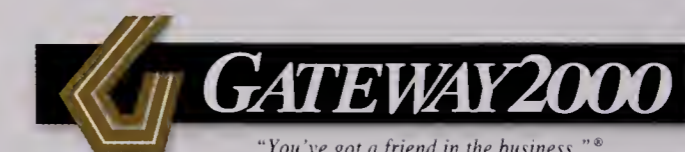
portables and big screen PC/TVs specially designed for your business demands.

The Gateway E-Series was specifically developed to fit the broad needs of any enterprise environment, with fresh technology, stable platforms and ease of manageability. By building Desktop Management Interface (DMI) into each E-Series PC, network administrators can diagnose and correct potential problems before they occur, and better manage their company's PC inventory.

Gateway Solo series portable PCs offer power without compromise, and quality modularity within the family. Batteries, CD-ROM and diskette drives are easily interchangeable between most systems. Gateway Solo Docking Stations make easy, one-step connections to your PC or network easy and affordable.

The Destination Big Screen PC/TV revolutionized the computer world by integrating the PC with the TV. Now the Gateway Destination Business Series is revolutionizing the corporate world. These high-powered, network-ready convergence systems feature 31-inch VGA color monitors, wireless keyboards and Field Mouse remote controls. The Destination system adds life to presentations with dynamic visuals and sounds, and facilitates group computing by letting users get comfortable around a conference table or desk while using a PC.

Gateway's diverse product lines feature a variety of systems designed to increase your Value of Ownership by giving you the latest technology with maximum benefits, while helping keep costs low over the life cycle of your PCs. Call Gateway Major Accounts today for the family designed for *your* business.



8 8 8 - 8 8 8 - 0 3 8 2

www.gateway.com/majoract/majoract.htm

Gateway 2000 Major Accounts, Inc.
610 Gateway Drive • P.O. Box 2000
N. Sioux City, S.D. 57049-2000

GSA Schedule #GS-35F-4565G

© 1997 Gateway 2000, Inc. GATEWAY 2000, black-and-white spot design, EZ Pad, Field Mouse, "G" logo and "You've got a friend in the business" slogan are registered trademarks, and Gateway Gold, Destination, GATEWAY and Gateway Solo are trademarks of Gateway 2000, Inc. The Intel Inside Logo, Intel and Pentium are registered trademarks and MMX is a trademark of Intel Corporation. Not all Gateway E-Series desktop and Destination Business PC/TVs contain the Pentium II processor. Gateway Solo portables do not contain the Pentium II Processor. All other brands and product names are trademarks or registered trademarks of their respective companies. All prices and configurations are subject to change without notice or obligation. Prices do not include shipping or applicable sales tax. Many Gateway 2000 products are custom engineered to Gateway 2000 specifications, which may vary from the retail versions of the software and/or hardware in functionality, performance or compatibility. Gateway 2000 Major Accounts, Inc. is a wholly owned subsidiary of Gateway 2000, Inc. *The Destination 31-inch monitor is covered by a one-year limited warranty. Call or write for a free copy.

U P F R O N T

Misplaced keys

My 5-year-old daughter has a thing about Li'l Debbie brownies. When she gets it in her mind she wants one, she will not give it up. No amount of reasoning, arguing or shouting will deter her.

I sometimes think the U.S. government behaves the same way regarding encryption. Despite opposition from just about everybody who has any stake in electronic commerce, the government continues to doggedly pursue key-escrow recovery encryption. That's the system by which the feds get to look at encrypted messages if they think it's necessary.

The latest development is the Secure Public Networks Act (www.senate.gov/~kerrey/encrypt/encrypt1.html), a bill now before the Senate Judiciary Committee. The measure, billed as a compromise, is really an effort to hard-code key recovery into a national electronic commerce system. Although the language of the bill doesn't technically require key recovery, it makes it impractical

People won't send messages if they think the government can look at them.

for anyone who wants to conduct Internet transactions to avoid government snooping. Much of the computer industry, in tandem with privacy advocates, opposes key recovery because of the (correct) belief that people won't send secure messages if they think the government can look at them. Yet federal security agencies keep at it, believing that the possibility that bad people will use encryption is justification for handcuffing everyone else. They're backed by the Clinton administration, which, ironically, just called for a hands-off Internet policy. The Secure Public Networks Act is bad legislation but is moving through Congress at blistering speed and may become law by the end of this summer. If you have a stake in electronic commerce, write your representatives in Washington and tell them to oppose the bill. I'm going to send mine a package of Li'l Debbie brownies.

Paul Gillin, Editor
Internet: paul_gillin@cw.com



Pentium II ready for servers

► ECC memory necessary for stability

By April Jacobs

INTEL CORP. plans to announce its Pentium II processor with ECC memory this week, bringing its latest chip offering up to speed for the server market.

Error Checking and Correcting (ECC) memory is important because it helps safeguard against errors that could bring down a server.

"Customers have been wanting ECC memory because they know it will prevent errors. And if they don't see it, they tend to wait longer to purchase any systems until it's available," said Jennifer Munson, an analyst at Workgroup Strategic Services in Portsmouth, N.H.

"Intel will always be adding faster processors to its lineup. But as far as developing a rounded core of offerings, this announcement will do that for Intel," she said. "Obviously, they want to play in the enterprise level, but until they had ECC, the Pentium II would be just another processor to many companies."

Analysts expect hardware vendors such as Hewlett-Packard Co. and Dell Computer Corp. to announce Pentium II-based systems as early as this week. Other vendors, including Compaq Computer Corp. probably will wait until the chips ship in full volume, they said.

Sources close to Dell confirmed that the company will

ship the new PowerEdge 4200 server as a departmental, mid-range server. It will succeed the PowerEdge 4100, a dual-processor Pentium Pro Server.

The PowerEdge 4200 will feature speeds of 233, 266 and 300 MHz. Standard features will be redundant cooling, hot-pluggable disk drives and ECC memory. Hot-pluggable redundant power supplies and RAID support will be optional. The server features the same type of chassis as the rack-mountable 4100 and 6100 PowerEdge models.

When Intel initially released the Pentium II this spring — which features speeds of 233, 266 and 300 MHz — many major hardware vendors lined up with desktop machines to support it. □

Virtual tape servers save real money

By Tim Ouellette

VIRTUAL TAPE servers are becoming a reality, offering users a way to slash their tape storage costs.

Sutmyn Storage Corp. in Santa Clara, Calif., this week will begin shipping Scimitar/VTS. It is a bundle of disk arrays with software that places the most-used tape data on disk so it is at users' fingertips, and that crams as much data as possible into each tape cartridge.

IBM is already shipping its Virtual Tape Server, and Storage Technology Corp., the leading high-end tape systems vendor, in Louisville, Colo., will ship its VSM product next year [CW, April 7].

Scimitar differs from those offerings because it works with existing tape cartridges in users' tape libraries and silos instead of requiring users to buy the newest technology or only certain vendors' products.

For example, IBM's Virtual Tape Server requires users to have the latest Magstar tape cartridges and libraries. And with VSM, users will need to use newer StorageTek tape products.

The influx of new virtual tape products promises to give users faster access to data stored on tape and more efficient use of their existing tape systems.

Most tape cartridges today get only partially filled, requiring more time-consuming robotic tape mounts and more floor space for new tape libraries to

hold the ever-growing number of cartridges.

"Virtual tape is a slam dunk for us," said Dan Kaberon, manager of computer resource management at Hewitt Associates, Inc. in Lincolnshire, Ill.

REGAINING CONTROL

Hewitt, the largest outsourcer of human resource management services in the U.S., is testing Scimitar to control an ever-growing population of tapes, estimated at 270,000 right now.

"We are looking to this to be a media masher; we want to save floor space," Kaberon said. "Previously, instead of adding human operators [to manage tape mounts], people bought tape robots. Now, instead of adding additional robotic systems to handle all the tape, users can use virtual tape servers."

Robotic tape systems can cost millions of dollars, whereas virtual tape systems most likely will range from \$200,000 to \$500,000.

Scimitar works with any tapes in place at a user's site by attaching through the mainframe (mainframe library management software is included with the package) to any MVS-compatible tape system instead of connecting directly to a target tape system.

"If users can turn around and take existing silos and cartridges that they have today and outperform the speeds of newer tape cartridges and libraries, that would be worthwhile for them," said Paul Wolfstaetter, an analyst at Gartner Group, Inc. in Stamford, Conn.

Virtual tape is well-received by users because they have seen mainframe disk prices drop to less than \$2 per megabyte and performance increase drastically, while tape technology hasn't changed as fast.

That is true even though more data — three times more, according to some industry estimates — is stored on tape than disk. □

THE FIFTH WAVE

BY RICH TENNANT



"NO, THAT'S NOT A PIE CHART, IT'S JUST A CORN CHIP THAT GOT SCANNED INTO THE DOCUMENT."

©1997 Rich Tennant at the5wave@tiac.net

Come visit our Web site @ Computerworld

Check out our RealAudio interviews:

- JOHN GERDELMAN, president of NetworkMCI Services in Boston, discusses the IT ramifications of MCI's massive merger with British Telecommunications and what else he has going on these days. This will be posted July 16.
www.computerworld.com/cbc/
- STEPHANIE MOORE, an analyst at Giga Information Group in Cambridge, Mass., offers advice about year 2000 products and services. This will be posted July 14.
www.computerworld.com/cbc/

Time not on Microsoft's side

► Overhaul of SQL Server not due until 1998, leaves door open for Oracle

By Craig Stedman

MICROSOFT CORP.'S assault on the corporate database market is running up against a tough foe: time.

An initial beta-test version of SQL Server 7.0 — a major overhaul designed to beef up Microsoft's database so it can scale to enterprise levels — was released late last month. But hopes that the new database would be ready for production release this year have evaporated.

In recent months, Microsoft has hedged its bets on shipping SQL Server 7.0 between late this year or early next year. But now it is targeting "sometime in the first half of 1998," said Jim Ewel, SQL Server group product manager at the Redmond, Wash., company. An earlier release "is highly unlikely at this point," he said.

The extended delivery schedule shouldn't hamstring Microsoft's proven ability to sell SQL Server to departments and small businesses. But it gives Oracle Corp. more time to grab database users who are building cor-

porate applications on Windows NT, said Carl Olofson, an analyst at International Data Corp. (IDC) in Framingham, Mass.

And Oracle has been doing a lot of grabbing: Olofson said Redwood Shores, Calif.-based Oracle last year "at least pulled even" with Microsoft on NT database revenue. "Microsoft has been selling futures against reality at the upper end of the database market, and that's where the money is," he said.

Texas Guaranteed Student Loan Corp. uses SQL Server for some "relatively simple" departmental applications because it is so easy to administer, said Andrew Bergstrom, assistant vice president of new products and services at the nonprofit insurer of college loans in Austin.

But in standardizing on NT for all future development, the company chose IBM's DB2 database to run its industrial-strength applications, Bergstrom said. SQL Server wasn't robust enough to compete against DB2 and Oracle when the decision was made last year, he said.

Hoping to break out of its low-end shackles, Microsoft this quarter plans to ship an enterprise version of SQL Server 6.5 that can handle more processors and memory.

SQL Server 7.0, code-named Sphinx, will go much further by increasing the database's 200G-byte capacity limit to a terabyte and adding key scalability features such as parallel querying and full row-level locking.

Microsoft also is building data warehousing features in to SQL Server 7.0 and developing a

companion online analytical processing server code-named Plato. The decision-support software was promised for beta-testing this quarter, but Ewel declined to comment on its status last week.

SQL Server 7.0 hopefully will mean faster processing and more flexible querying for users, said James Xu, vice president of technology at Aristotle Publishing, Inc. in Washington. Aristotle runs a voter information database on SQL Server 6.5 and expects to start testing

Sphinx this week.

Xu said he wants to be able to run more complex analytical queries against the database, "but I really avoid doing that now." But a 1998 release date for Sphinx is understandable given the amount of changes that Microsoft is making, he said. "They have a lot of work on hand."

Even after SQL Server 7.0 ships, it could be held back at enterprise levels while users wait for NT to mature, said Herb Edelstein, a consultant in Potomac, Md. □



Aristotle's James Xu

Should help on big applications with lots of users

Netscape packs more into its SuiteSpot 3.1 servers

By Barb Cole-Gomolski

NETSCAPE Communications Corp. is trying to make its server line easier to buy and manage.

The company this week will announce new packaging for its SuiteSpot 3.1 servers. It will offer standard edition and professional edition bundles instead of making users purchase the nine servers separately.

SuiteSpot 3.1 will also include a new management console that lets administrators of World Wide Web sites and intranets replicate changes across all nine servers.

Broad support for the Lightweight Directory Access Protocol (LDAP) is also on tap in the upgrade, allowing sites to share directory information more easily, sources said.

"This is good for us because we're planning to use LDAP extensively," said James Martin, webmaster at Chubb & Son, Inc. in Warren, N.J.

Several Netscape servers power the insurance company's in-

tranet. "It will be much nicer when those servers can talk to each other via LDAP," Martin said.

Netscape, in Mountain View, Calif., declined to comment on the announcements.

ALL THAT AND MORE

SuiteSpot 3.1, due in the fourth quarter, will include a beta version of Compass Server. Based on a user profile, Compass Server filters information on corporate intranets and builds a document index that may be searched.

SuiteSpot already includes Calendar, Certificate, Collabra, Directory, Enterprise, Media, Messaging and Proxy servers.

Along with the upgraded servers, Netscape is expected to announce plans to offer its products through a group of resellers. Currently, most customers buy Netscape software via the Web, according to Harry Fenik, vice president of Zona Research, Inc. in Redwood City, Calif. □

Have I got a fix for you!

An IS manager was approached by a slick-talking salesman who claimed his company could convert any program at the manager's company for \$100.

"It sounded like a backyard operation," the manager said.

Welcome to the sleazy side of the year 2000 industry, where some companies are trying to cash in on a \$600 billion market.



For tips on separating the reputable from the incredible, turn to **Managing**, Page 59

Sun boosts high-end workstations

By Jaikumar Vijayan

SUN MICROSYSTEMS, INC. this week will bolster its position in the high-end Unix workstation market with a new box and architecture.

The company will extend its desktop lineup with a high-end system based on the 300-MHz UltraSPARC chip.

The system is a single-processor version of the Ultra 2 workstation announced earlier this year and will feature built-in Gigabit Ethernet support, Sun's Creator three-dimension-

al graphics and optional support for a high-definition television monitor.

Prices for the system, which is being positioned beyond the highest end of most Microsoft Corp. Windows NT systems, start at \$21,495 for 128M bytes of memory and up to 4G bytes of hard disk space.

S-BUS REPLACEMENT

Sun is also expected to announce a Peripheral Component Interconnect (PCI)-based I/O architecture that will replace its existing S-bus technology.

The move to the industry-standard PCI architecture means Sun can now use the same standardized, low-cost PC components that Windows NT vendors use to build their workstations.

"Throughout the middle to the end of last year, most Unix vendors were like deer caught in the glare of Windows NT's headlights," said Tom Copeland, an analyst at International Data Corp. in Framingham, Mass.

"Now some are finally starting to respond," he said. □

Price of Web poker just went up

► Companies to pay millions for high visibility

By Mitch Wagner

LAST WEEK'S multimillion-dollar deals designed to bolster the visibility of World Wide Web sites may mark the end of an era of shoestring online budgets.

In the early days of the Internet, a corporate Web site could be built with just a few information systems managers who worked evenings and weekends using secondhand equipment. Now there are so many sites online, corporations are starting to require full-scale business plans and are making big investments in staff, time and money to find their customer base.

Online bookseller Amazon.com, Inc. and florist 1-800-FLOWERS, Inc. last week signed multimillion-dollar cross-promotion deals with major online services and ultrapopular Web sites. Their goal is to leverage the huge visibility of those services and sites to get Amazon.com and 1-800-FLOWERS in online consumers' faces.

THE VALUE OF GATEWAYS

The deals are part of a trend emerging as companies find they have to devote extensive resources to attracting customers online. Many firms will choose to pay big bounties to America Online and the major search engines because those companies have close relationships with customers, and they can deliver those customers for other companies, said Chris Stevens, an analyst at Aberdeen Group Inc., in Boston. "There are a few gateways emerging that are controlling a lot of the traffic on the Internet," Stevens said.

"The Internet is slowly getting to the point where it has a critical mass of audience, and you have to have resources of a [certain] scale to reach that audience," said Jeff Morris, senior vice president of new media and technology development at Showtime Networks, Inc. in New York.

The problem is noise, webmasters said. Everyone can go online, and everyone is. Herndon, Va.-based Networks Solutions, Inc., which handles domain registrations (see related story, top right), recently report-

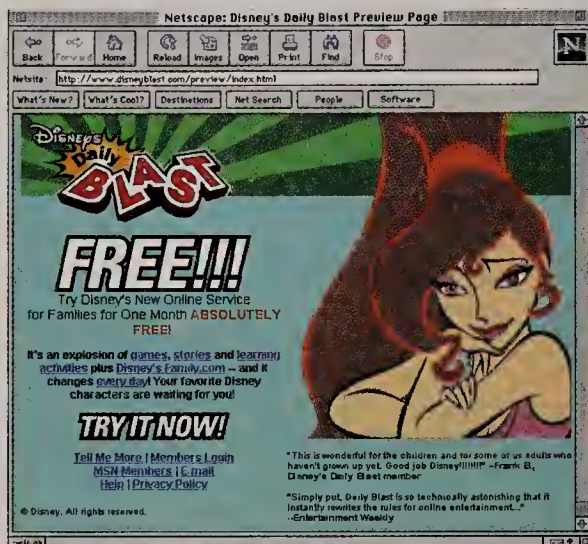
ed its millionth registered site in the .com domain. The common wisdom three years ago was that any company, no matter how small, could go online and find its customers around the world. Now it seems every company, no matter how large, is having diffi-

Yahoo, Inc., for example.

Even the The Walt Disney Co. — with one of the most recognized trademarks in the world — has marketing deals with Excite in Redwood City, Calif.; Lycos, Inc. in Marlboro, Mass.; and Yahoo in Mountain View, Calif., among other popular online sites. Jeff Bender, director of consumer advertising at Disneyonline, said Disney's brand may be well-known, but its for-pay, Internet-based online service isn't.

Disney is advertising the service through conventional media, but many of the customers it reaches don't have online accounts. To find Internet users, you look to the Internet — and you look, especially, to Excite, Lycos and Yahoo, which are the sites many online users visit first and

most often, Bender said. 1-800-FLOWERS last week announced a four-year contract with America Online, in Vienna, Va., to be the exclusive seller of flowers and plants on the company's online service. The contract is worth a mind-bending \$25 million. It is a continuation of a three-year contract the Westbury, N.Y., flower and plant company already has with America Online. The company expects to generate the money from its marketing bud-



Disney is making cross-marketing deals with search engine companies

culty finding its customers — and vice versa — online.

To resolve that problem, electronic-commerce sites are turning to the major search engines and commercial online services in an attempt to buy publicity. Because those sites consistently rank among the most popular sites on the Web, online merchants are cutting deals and paying big bucks to guarantee publicity on America Online, Inc.'s Web site and the search engines run by Excite, Inc. and

Ease of navigation key to successful E-malls

By Stewart Deck

SOME INTERNET shopping center experts say online malls can thrive without expensive billboards. It isn't necessary to shell out top dollar for prime real estate to attract shoppers, but it is vital to keep one thing in clear focus: the comfort of the shopper.

"Anyone who gets into this has to realize it isn't going to be cheap or easy, but it can be done," said David Taylor, an analyst at Gartner Group, Inc. in Stamford, Conn. "But you can't just string together storefront links and expect shoppers to show up." Taylor counseled de-

velopers to build a solid infrastructure with secure payment capabilities and messaging features for quick communication.

Complex shopping sites need a sense of transaction completeness and consistency, agreed D. Navin-Chandra, chief scientist at Perot Systems Corp.'s electronic-commerce business unit and a former mall developer at now-defunct Nets, Inc.

An online mall should also clearly define what it has, Navin-Chandra said. "If people can't understand what is available, they won't come back. Sites such as Amazon.com or Travelocity.com have done a great job of explaining themselves and

'net gains hard to quantify

With major resources going into Web sites, corporations are starting to press harder for identifiable return on investment.

For some sites that sell goods online, business managers can see if incoming revenue exceeds outgoing costs. But for many Web sites, return on investment is harder to measure, said Alan Citron, senior vice president of multimedia at Ticketmaster Corp. in Los Angeles, which has joint marketing deals in place with Excite and other sites.

"The issue you face when you're a Web merchant is, what is success?" Citron said. "There's nothing to base it on. Is it simply being in the black financially? Is it growing your traffic at a certain percentage rate a month? Is it simply getting a certain number of eyeballs? The industry will be looking at these sorts of big, cross-promotion deals for the next six months."

That kind of high-stakes gambling doesn't suit many big companies, and they are likely to bail out of high-investment Web sites when they don't see a quick return, said Jeff Morris at Showtime Networks. "A lot of companies are looking to see a return on that kind of investment fast," Morris said. "Over the next couple of years, we'll begin to see a shakeout of who's playing on the Internet and how they're playing."

When the stakes get high, greater attention to business value is required. Increasingly, that means IS departments don't drive the sites. Instead, marketing departments or other business units take the lead, with IS providing technical support.

Meredith Corp. in New York, for example, is about to launch a new version of the *Ladies' Home Journal* site. Until now, the site has been a joint project of the magazine's editors and IS department, with editors creating content and throwing it over the transom to IS to post online. Now, the site is being reworked by its publishers, with business needs taking the foremost priority and editorial, graphics and sales concerns controlling content and how it is presented.

"We're bringing out our heavy hitters to run the Web site, rather than go out and hire kids," said David Cohen, director of new media at Meredith. "We're doing this with a business plan, a creative plan, and handling it totally formally, the way we would launching a new magazine." — Mitch Wagner

get, fueled by the more than \$250 million in sales it expects to do online in that period.

Amazon.com also announced last week a multimillion-dollar advertising contract with Excite

and a cross-promotion campaign with Yahoo for undisclosed sums. The deal will be a marketing expense covered by online sales and capital raised in its recent stock offering. □

are successful," he said.

With planning, online shopping centers can create a feeling that is difficult for their real-world, brick-and-mortar counterparts: a sense of community.

Craig Ellerbroek, director of the electronic-commerce division at Lockheed Martin Corp.'s Internet Business Solutions group, said these communities can be built around subjects such as hobbies (sports or collectibles, for example) or high-quality merchandise.

Chat features and message forums where shoppers can compare experiences and purchases provide the same function as a real-world bench or sidewalk cafe: They allow visitors to pause, spend a few minutes and look forward to returning. Ellerbroek added that virtual malls can cross-promote items in other stores and set up complex customer loyalty programs

(using customer shopping data) that the stores on Main Street can't approach.

Online neon is one feature that can turn visitors away from a mall. Too much graphic flash and dazzle can take too long to download and make site navigation confusing, according to Michael Katz, a senior vice president at Booz Allen & Hamilton, Inc., a New York-based consultancy.

"We only selected vendors that had secure payment facilities and high-quality products," said Tuck Rickards, founder and CEO of Virtual Emporium (www.virtualemporium.com), an online mall of 180 stores and more than 5 million products.

"By putting products first and building in ways for the customers to quickly post their opinions and their evaluations, we think we'll be successful," Rickards said. □

Our Software Secures More Corporate Data Than All Our Competitors Combined.



exciting new features like a real-world, 3-D interface with virtual reality, Business Process Views™ and advanced agent technology.

No other management software offers anything like it.

Single Sign-On lets users use one password and sign on once for every platform.

The Best Feature Of All Is Unicenter TNG Is Shipping Today.

While our competitors are talking about a framework for the "future," Unicenter TNG is a proven software solution that's available today. It's real, it's mission-critical and it's up and running in thousands of sites around the world for some of the smartest clients in the world.

Our clients sleep soundly every night knowing that all their IT assets are safely protected by the best security software in the world. Shouldn't you?

SHIPPING TODAY

**For More Information Call
1-888-864-2368
Or Visit www.cai.com**

COMPUTER ASSOCIATES®
Software superior by design.

More clients — including 462 of the Fortune 500 — trust CA security software than all the partial, proprietary solutions offered by IBM/Tivoli, Platinum and Boole & Babbage.

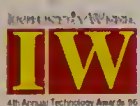
CA Security Software Is #1.

CA holds more security "firsts" than any other vendor. CA was the first to secure IBM's DB2 platform (two years before IBM). CA was the first to identify and address all the security risks of

UNIX and NT. And with the introduction of ICE (Internet Commerce Enabled™), CA is the first to make it safe to do business on the Internet.

Unicenter TNG Is The Industry Standard For Network And Systems Management.

Unicenter® TNG™ offers the only integrated solution for true end-to-end enterprise management. With support for every major hardware platform and operating system, Unicenter TNG is open, scalable, extensible and 100% vendor-neutral. In addition, Unicenter TNG offers all kinds of powerful and



Unicenter® TNG™

©1997 Computer Associates International, Inc., Ithaca, NY 14850-7000. All other product names referenced herein are trademarks of their respective owners.

Users cool on Exchange upgrade

► Scalability lauded, but key features missing

By Barb Cole-Gomolski

MICROSOFT CORP. Exchange sites will get a more scalable server when the Osmium release ships later this year.

But drawbacks — such as the lack of support for Hypertext Markup Language (HTML) forms in the Outlook client or an enterprise directory — will likely linger long after the upgrade is out the door.

The Osmium release of Exchange, due by year's end, is expected to let companies run more users per server because it removes the current 16G-byte limit on mail storage. It also has improved support for Internet protocols and a new feature, called Dumpster, that will make it easier for administrators to re-

store messages that have been deleted, according to beta testers.

Users applauded these enhancements because they can save administrative overhead, and in the case of the boosted mail storage, reduce the number of servers needed. But a handful of sites among the 100 early beta testers of Osmium were decidedly lukewarm.

NOTHING THERE

"From what I can see, there won't be that much [in Osmium] for us," said Archie Reed, design architect at Charles Schwab & Co. in San Francisco, an Osmium beta site that is moving 11,000 users to Exchange.

Osmium's support for Inter-

net Message Access Protocol 4 (IMAP4), which allows disconnected users more flexibility in accessing mail, and the Lightweight Directory Access Protocol aren't that important to Schwab at this time, he said.

Schwab's main priority is to get a more manageable directory, Reed said. Exchange currently has its own directory, which Reed described as "inflexible." Users and analysts said a remedy won't appear until Microsoft's Active Directory ships with Windows NT 5.0 some time next year.

Tom Austin, an analyst at Gartner Group, Inc. in Stamford, Conn., said he knows of two large Exchange shops that have frozen their deployments and won't move forward until Microsoft replaces the Exchange directory with Active Directory.

OSMIUM ENHANCEMENTS

- Support for IMAP4
- Dumpster that lets administrators recover deleted messages
- Unlimited storage on messaging servers
- Updated Outlook Web client that lets users send attachments and schedules

"Some of these customers need to manage multiple domains remotely, and that [capability] just isn't there today," he said.

Similarly, some sites have put application development plans on hold because they rejected the Exchange Forms Designer tool as proprietary and weak. Instead, they are waiting to build groupware applications for Exchange, using a HTML-compliant version of Outlook.

Microsoft officials said the company is adding support for HTML forms in Outlook but

hasn't yet set a ship date.

Not all sites are unmoved by Osmium, however. Bechtel Group, Inc. in San Francisco passed on the Exchange 5.0 upgrade but can't wait to get Osmium in-house, said Chris Zeck, corporate infrastructure manager. Zeck said the 16G-byte storage threshold has limited the scalability of the firm's servers. "We think Osmium [with its unlimited storage] will help us avoid some additional [server] hardware purchases," Zeck said. □

OBJECT DATABASES

Informix mutes Universal Server hype

By Craig Stedman

UNIVERSAL SERVER may be forgotten, but it isn't gone.

Informix Software, Inc. turned out the marketing lights on its new object/relational database after a stunning \$140 million first-quarter loss — chalked up in part to the vendor pushing Universal Server too hard, too soon. The software wasn't widely available, and most users weren't ready for its object features.

Seven months after its gala introduction, Universal Server is expected to be kept far from the spotlight when Informix's user group meets in San Francisco next week. Instead, Informix will wave the Windows NT flag for its mainstay OnLine relational databases.

Several early adopters of Universal Server said they haven't seen any pullback of technical commitments by Informix since the Menlo Park, Calif., company put the lid on the database. But Informix did scale down plans for expanding Universal Server's limited hardware support during the second quarter, which forced some interested users to remain on hold.

And other users who like the idea of Universal Server's support for object technology and multimedia forms of data are

still trying to find real-world applications that need the new database.

For example, First Chicago Mercantile Services LLC mulled using Universal Server to build an image-enabled payment processing service for banks and credit-card companies. But its customers weren't interested in



Sabre's Brad Jensen:

"Right now is when they should have been marketing Universal Server because it's just about ready"

the image plans, and no other potential uses for the database are on the horizon, said Maribeth Anderson, manager of technology at the Chicago firm.

"I still consider it to be an in-

teresting product, but even when we were looking at it, the idea we had was kind of a stretch," Anderson said.

On the marketing side, Informix "did come out of the box too long before the product was ready," said Brad Jensen, a vice president at Sabre Technology Solutions, the information technology unit of AMR Corp.'s Sabre Group subsidiary in Fort Worth, Texas. But Universal Server "is finally starting to come together," said Jensen, who is building an object-based data warehouse for AMR's American Airlines unit.

However, Informix did slow down the hardware porting process for Universal Server. The database, which was released on just two Unix platforms, was due to get support for Windows NT and four other Unix implementations in the second quarter. But the NT version is still in beta testing, and only one of the Unix ports made it out the door, Informix officials said.

That leaves the American Medical Association (AMA) on ice because the Sequent Computer Systems, Inc. Unix boxes it uses lack the promised support for Universal Server. "We're still hanging on, but it's hard to get too excited until I can get it," said Jack Look, a data designer at the AMA. □

SAP R/3 users gain options for document management

By Randy Weston

DOCUMENT management vendors are hooking up to SAP AG's R/3 to make it easier for companies to manage important documents in a central location.

Among the vendors offering R/3-ready document management software are FileNet Corp. in Costa Mesa, Calif., and Documentum, Inc. in Pleasanton, Calif.

The products are geared mainly toward chemical, pharmaceutical and other process manufacturers that are required by federal law to keep strict records.

With those documents stored in workgroups around the world, it can be difficult for other workgroups and corporate headquarters to access the information.

FIND IT FAST

But when a government regulator comes calling, the central office needs quick access to the information.

Currently, headquarters has to shoot off faxes and electronic mail to the various offices and call in an overnight delivery service.

Enter R/3.

Gerry Murray, an analyst at

International Data Corp. in Framingham, Mass., said as companies standardize on a single software system such as R/3, it makes sense to link document management systems to it. The result is R/3 becomes the enterprise link between the various distributed workgroups.

"Increasingly, the trend is to make all these systems available so someone can, in fact, answer a question on the phone," Murray said. "Ultimately, the challenge is to make all these reports work together and make these enterprise approaches work."

SOON TO BE INCLUDED

But Murray said it is only a matter of time before vendors such as SAP begin including document management functionality in systems such as R/3, especially as they become more entrenched in vertical markets such as the process industries.

Amoco Corp., a \$36 billion petroleum and chemical processing company in Chicago, couldn't wait.

It tested the FileNet system on an R/3 rollout at its Fiber and Fabrics division. It is rolling out R/3 to 10,000 users around the globe, with 5,200 users linked to the FileNet suite for R/3. □

**ENTERPRISE
SOFTWARE**

Oracle8

**Unprecedented economies of scale.
10 times more users. 10 times more data.**

What the experts are saying:

"It's hard to overstate the significance of Oracle8. Object-relational technology is no longer just for pioneers and early adopters. We recommend that Oracle8 be implemented as soon as possible."

—Patricia Seybold Group

"The installation and upgrade tools for Oracle8 rival a Macintosh for ease-of-use."

—Standish Group

"Oracle8 contains significant enhancements that improve performance, scalability, reliability, availability, and efficiency both for OLTP and DSS applications, including impressive scalability and ease-of-use enhancements for NT."

—International Data Corporation

"Oracle has the momentum of a battleship and the maneuverability of a jet ski. Oracle8 will be impossible to stop."

—Aberdeen Group

The Gartner Group's report had really nice things to say too, but we don't have permission to quote from it. So order that or any other analyst's report on Oracle8.[™] Then, call us at 1-800-633-1071, ext. 11675 or check out <http://www.oracle.com/st/>

ORACLE[®]

Enabling the Information Age[™]

Shipper saves money by using the 'net as its WAN

By Bob Wallace

INTERNATIONAL Shipholding Corp. expects to save \$120,000 per year after replacing its international frame-relay network with an Internet connection between Singapore and its New Orleans headquarters.

On Jan. 1, the shipping company switched to using the Internet as its wide-area network for sending all financial and billing transactions.

Previously, "our system response time was slow, we were severely restricted in the number of users we could put on the network, and we could only support one application at a time," recalled Stephen Fraser, director of information systems at International Shipholding. "Adding bandwidth would've addressed these situations, but doing so was cost-prohibitive."

A network upgrade would

have required adding two frame-relay lines, a second server, an Oracle Corp. database, additional software from Lawson Software and two people to run the operation, Fraser said. Dodging those costs will produce the estimated savings.

The upgrade would have cost about \$150,000, including installation. The Internet connections and the fire-

walls together cost about \$30,000, according to Michele Spoons-Wood, director of systems business analysts at International Shipholding.

Few companies in the entire user community use the Internet in place of a WAN, said Daniel Briere, president of TeleChoice, Inc., a global telecommunications consulting firm in Verona, N.J. "This could be the beginning of a trend for multination-

als if global carriers don't come out with coherent international frame-relay strategies and make pricing much more attractive."

SECURITY CONCERNS

Not surprisingly, International Shipping worried about Internet security and performance when transmitting sensitive financial data. So the company bought two high-end Cisco Sys-

"Our system response time was slow ... and we could only support one application at a time."

**- Stephen Fraser,
International Shipholding**

tems, Inc. PIX security systems to keep out hackers and encrypt Internet transmissions, Fraser said.

Users in New Orleans and

International Shipholding's benefits from swapping a WAN for the Internet

- More bandwidth at lower cost
- No need to invest in additional hardware and software
- No additional staff needed
- Network performance increase
- Enough pipe for multiple applications
- Support for more users
- Capacity can be added easily and inexpensively

Singapore who had Pentium-based PCs and Windows 95 said they were pleased with the boost in response times when the company switched to the Internet, Spoons-Wood said.

In essence, the company swapped a 48K to 56K bit/sec. frame-relay link for two 1.544M bit/sec. T1 lines that run to an Internet service provider in New Orleans and two 512K bit/sec. lines that run to a service provider in Singapore. The company benefits from today's inexpensive Internet access.

Analysts said Internet access prices — now unprofitably low for some providers —

will likely rise within a few years.

"[Internet service providers] assume a normal amount of usage for their fixed-priced, unlimited usage plans," said Tom Nolle, president of CIMI Corp., a Voorhees, N.J., consultancy. "If [they] realize that enough users are going beyond normal usage, they may reprice, and users would lose their cushion."

That doesn't concern International Shipholding.

"Even if we had to pay a premium for our connection or pay for a few additional lines, the Internet would still be the lowest-cost approach, and we could absorb the price increases," Spoons-Wood said. □

S H O R T S

Tennessee unplugs spam lawyer

The Tennessee Supreme Court has disbarred an attorney whose firm spammed thousands of Usenet newsgroups with ads promising to secure U.S. work papers for unregistered aliens. Among other charges of professional misconduct, Laurence Canter at **Canter & Siegel** was cited by the state's Board of Professional Responsibility for splashing unsolicited ads across the Internet in a way that was "both unethical and egregious." Canter's firm, a longtime target of critics at the Electronic Frontier Foundation and other groups, has offices in Tennessee, Arizona and California.

FBI probes credit-card theft

Officials at **Starwave Corp.** are blaming someone with in-house systems knowledge for intruding on a secure, encrypted order-processing system to gain access to the credit-card numbers of 2,397 online shoppers at the ESPN SportsZone and National Basketball Association World Wide Web sites. Shoppers received an anonymous electronic-mail message warning they were victims of careless security and their credit-card numbers and addresses were easily available. Starwave alerted the shoppers that their credit cards may have been misappropriated and enacted new security measures. The Federal Bureau of Investigation and the U.S. Secret Service are investigating the incident.

NDS ported to IBM systems

Novell, inc. last week licensed Novell Directory Services (NDS) to run on IBM's RS/6000 Unix servers and S/390 mainframes. The move is intended to lower man-

agement costs and reduce network complexity by giving users a single view of all network resources. IBM's porting of NDS to run on its systems follows moves by other Unix vendors, including Hewlett-Packard Co., Fujitsu Ltd., SCO, Inc. and Sun Microsystems, Inc.

3Com, Siemens team up

3Com Corp. in Santa Clara, Calif., and **Siemens AG** in Munich, Germany, last week announced an alliance to integrate voice and data over a single LAN for corporate users. That will entail getting 3Com's data communications products to work with Siemens' Hicom private branch exchange lines, which are used widely outside the U.S. The technology initially will target call centers and branch offices, which are among the first to use computer-telephone integration.

Intuit picks Internet Explorer

Intuit, Inc. said it has ditched an agreement to bundle Netscape Communications Corp.'s Navigator browser with its software in favor of Microsoft Corp.'s Internet Explorer. Intuit will integrate Explorer into its Quicken, QuickBooks and TurboTax software. Microsoft will carry Intuit information to Explorer users using "push" technology built in to Explorer. The deal is the latest step in the hot-and-cold relationship between Microsoft and Intuit. Microsoft tried to buy Intuit two years ago, but the U.S. Department of Justice killed the deal.

Novell makes pirates pay

Novell in Provo, Utah, recently pocketed more than \$1.3 million in software piracy settlements involving

five companies and two individuals, the company said recently. The companies involved were selling NetWare and IntranetWare upgrades at higher prices to unsuspecting customers. The settlements are the direct results of leads from Novell's product tracking system and tips received on its antipiracy hotline.

Student finds NT security hole

A security hole in Windows NT can allow local users to get administrative privileges and access other users' files, a Russian student announced recently on the Internet. His NT attack, dubbed "GetAdmin," only applies to local users who gain access to privileges on that group. It doesn't work for outside attackers. **Microsoft** has issued a patch for the problem, available at <http://ftp.microsoft.com/bussys/winnt/winnt-public/fixes/usa/nt40/hotfixes-postSP3/getadmin-fix>.

SHORT TAKES **Novell** next week will begin beta-testing GroupWise 5.2, which supports Internet Message Access Protocol 4 and the Lightweight Directory Access Protocol. ... German engineering firm **Carl Zeiss Jena GmbH** has become the first company to go live with **SAP AG's** R/3 on an IBM S/390 mainframe. The project went from testing to production in six months. ... New York investment firm **Welsh, Carson, Anderson and Stowe**, under the corporate name **CDSI Holding Corp.**, is paying approximately \$284 million for **Control Data Systems, Inc.**, an Arden Hills, Minn.-based systems integrator and maker of client/server software. ... **Genicom Corp.**, a printing equipment maker, has been holding talks to buy **Digital Equipment Corp.'s** printing systems business, but no sale agreement was reached last week.

Their Ugly Little Secret

The Secret Is Out

Most so-called Y2K solutions share an ugly little secret: the successful implementation of their approach requires you to hire hordes of expensive, hard-to-find programmers. And if you've read the industry reports, you already know that the demand for this kind of manpower far exceeds the supply.



The SoftFactory/2000 solution is technology-based requiring less manpower compared to other approaches which are primarily manpower-driven, supported by a little technology.

Which is exactly why we developed SoftFactory/2000.™ It saves time, money and manpower in every phase of the Y2K life cycle by utilizing Y2K problem-solving technology called SmartFind/2000.™ SmartFind/2000 intelligently filters your code to identify only true date fields and only the date occurrences that need to be modified.

In other words, our approach is technology-based, their approach is manpower-based. Which do you think is going to get you to Year 2000 compliance faster and cheaper?

To find out the whole truth about a fast and cost-effective Y2K solution, call Micro Focus at 1-800-632-6265. Then you can have a secret too... only it will be to your success.



Download your
SoftFactory/2000
Cost Savings Model from
www.microfocus.com/year2000.



Finalist



M I C R O F O C U S
Transforming The Enterprise

© Micro Focus 1997. All rights reserved.

The Micro Focus logo, SoftFactory/2000 and SmartFind/2000 are trademarks and Micro Focus is a registered trademark of Micro Focus Limited. All other trademarks are property of their respective companies.

HTML 4.0 aimed at improving Web site design

By Mitch Wagner

KEY VENDORS and the World Wide Web's chief standards body are lining up behind proposed extensions to Hypertext Markup Language (HTML) designed to keep Web pages looking sharp on differ-

ent vendors' browsers.

The World Wide Web Consortium last week unveiled the first public working draft of HTML Version 4.0. Along with Extensible Markup Language (XML), the pending next-generation complement to HTML, HTML 4.0 lets Web content de-

velopers more easily control the look and feel of documents in conventional PC-based browsers. It also allows those documents to be displayed on a wide range of devices.

HTML 4.0 now enters a period of public comment before the consortium de-

cides whether to adopt it as a final standard — or “recommended standard” — by fall, said Dave Raggett, lead HTML architect for the consortium in Cambridge, Mass., and an engineer at Hewlett-Packard Co.

The devices in question include non-standard browsers, handheld computers, proposed browser-enabled telephones, computers without mice and computers equipped with speech devices for the blind as well as enhancements for disabled people who can't use a keyboard or mouse.

John Sanders, senior vice president of management information services at Spelling Entertainment Group in Los Angeles, said he hopes the evolving standards will make it easier to design Web pages that are attractive in multiple browser types without testing the pages in all the different browsers.

Because memory should be the furthest thing
from your mind.

That's why

there's VisionTek.

Choosing the right path in today's changing client/server world isn't a no-brainer. The decisions you make today can put your IS organization on track for the future. Or saddle you with the wrong technology for years to come.

So if you haven't had time to think about your memory vendor lately, we understand. Actually, that's why we specialize in memory for corporate IS. To take you beyond OEM-quality products at fair prices. And give you ideas and expertise that make memory management so easy you won't have to think about it.

That means keeping you current on market forces that will affect your hardware budgets. Tailoring buy-back programs to help you upgrade more economically. Helping you cut downtime with loaners, no-hassle RMAs and same-day shipping. And more.

When you spec VisionTek, you get the attention, service and flexibility that giant vendors simply don't offer. All tailored to your IS needs. And in these times, that's one choice you can be sure about.

Call your authorized reseller or
1-800-781-4088.

more than memory

visiontek™

HTML 4.0 FEATURES

Advanced forms: Creates read-only form entries and adds labels and keyboard shortcuts for controls and titles.

Object support: Standardizes ways to embed objects on a page, including multimedia objects and program code. Also standardizes style sheets and scripting.

“From the earliest beginnings of the Web, there have been concerns about being able to present content with different browser versions,” Sanders said. “It just becomes more problematic as extensions to browsers and different dialects proliferate.”

The new standards have the support of Microsoft Corp. and Netscape Communications Corp., both of which have begun building the standards into their browsers.

MORE EMBRYONIC

HTML 4.0 was designed to codify and standardize some features, such as frames and style sheets, already implemented in proprietary extensions to the Web in Microsoft's Explorer and Netscape's Navigator. It also was designed to bring some new features to the Web, Raggett said.

XML is a more embryonic standard that was designed to let developers create their own tags, which control how text is displayed on-screen and interpreted by software.

XML is a subset of the Standard Generalized Markup Language, which was originally created in the 1960s to control displays for mainframes.

XML was designed primarily in order to allow content creators to create proprietary applications that run on the Web, especially on intranets and extranets.

For example, the author of a medical-records application might decide to create a special tag for “allergens,” said Tom Johnston, group product manager at Microsoft, which helped develop the standard. □

<http://www.visiontek.com> © 1997 VisionTek



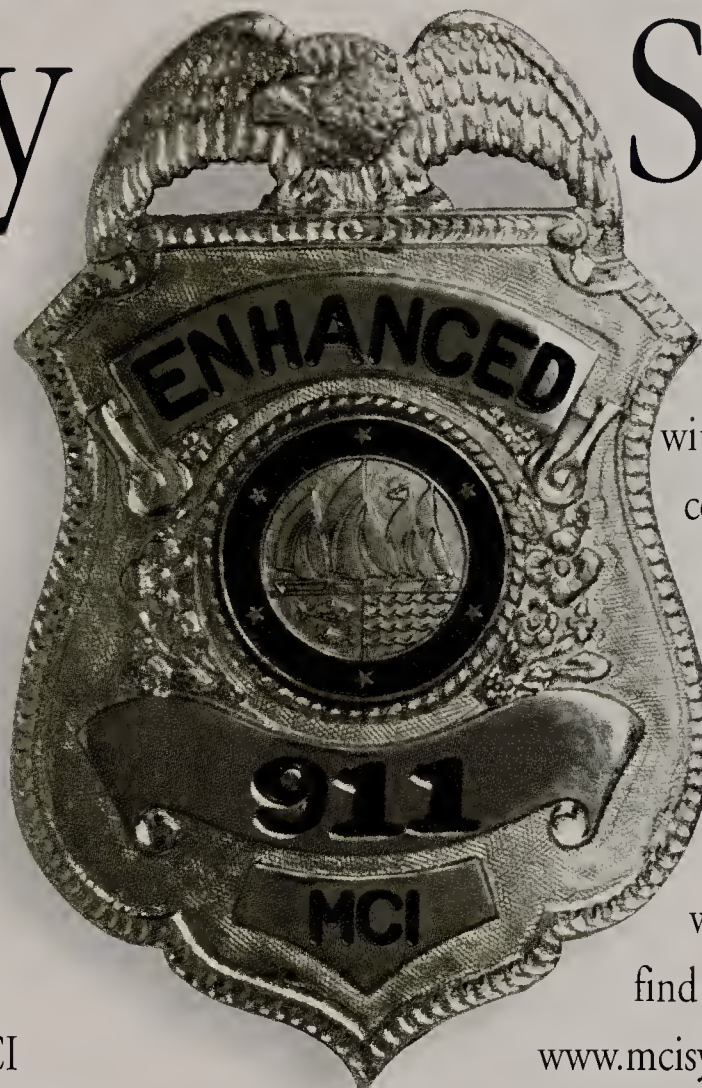
VisionTek, Inc.
Registered to ISO 9001
Certified NO. A5241



SERVICE
AGREEMENT

MCI Systemhouse Makes USA's Largest City Safer

Everyone's heard about the dramatic crime drop in America's largest city. A unique relationship between Forté, the International Public Safety Group of MCI Systemhouse and America's largest police department contributed to this. Just 12 months ago, MCI Systemhouse used the Forté Application Environment™ to create an enhanced 911 Emergency Response System. Built to maintain 99.999% operational reliability, it provides reliable service 24 hours a day,



365 days a year — without the need for costly, fault-tolerant hardware.

And now, that system is serving as a blueprint for communities

worldwide. You can

find out more at

www.mcisystemhouse.com.

Reserve a seat in our next free seminar or order your *Information Week* reprint of "Saving Time — And Lives: Enhanced 911 system helps New York police respond to more calls" via the Web. Or call 800-90FORTE (800-903-6783), today.

We guarantee a quick response.

FORTÉ

www.forte.com/cw

Arizona	
Phoenix.....	Jul 22
California	
Irvine.....	Jul 8
San Francisco.....	Jul 9
Canada	
Toronto.....	Jul 9
Colorado	
Denver.....	Jul 15
Florida	
Tampa.....	Jul 10

Illinois	
Rosemont.....	Jul 16
Massachusetts	
Boston.....	Jul 17
Michigan	
Southfield.....	Jul 18
Minnesota	
Minneapolis.....	Jul 8
Missouri	
St. Louis.....	Jul 15

New Jersey	
Parsippany.....	Jul 10
New York	
New York City.....	Jul 16
North Carolina	
Research Triangle Park.....	Jul 18
Ohio	
Columbus.....	Jul 15
Oregon	
Portland.....	Jul 22

Pennsylvania	
Philadelphia.....	Jul 22
Texas	
Dallas.....	Jul 18
Houston.....	Jul 9
Virginia	
Reston.....	Jul 12
Wisconsin	
Milwaukee.....	Jul 11

Hackers jump to their own defense

By Sharon Machlis
LAS VEGAS

SELF-DESCRIBED COMPUTER hackers using aliases such as Mudge, Sluggo and Dark Tangent tried to tell corporate systems administrators last week that they mean no harm. But in-

security job at a major corporation. True hackers will see how much they can penetrate, but when they get to the point where they would do major damage, they back off, he claimed.

"It's not about what I do; it's more of a mind-set," said Route,

spawn malicious attacks by teen-agers on the Internet. Panelists said they make their tools available to network administrators, inform vendors of security holes they find and also try to educate the computing community at large.

"We're here talking to you," said Dominique Brezinski, who has studied Windows NT security for three years and gave a presentation on the subject. "We try to help companies tighten up those holes that exist."

"Tools are inherently neither good or evil," Route argued.

LOADED GUNS?

But some in the audience disagreed. "Those tools are like a loaded gun; it depends who has it and where it's pointed," said one computer specialist who asked not to be identified.

Lester J. Fraim, director of security service at ANS Communications, an America Online, Inc. company in Reston, Va., said hackers "may not be malicious, but there are people who learn from them who are. I think they need to be more socially responsible."

Ira Winkler, a security consultant and author of *Corporate Espionage*, said he considers the

Detection key to prevention

Keeping up with known security holes is one of the best things an administrator can do to thwart hackers, said consultant Ira Winkler at last week's Black Hat Briefings security conference.

Virtually all attacks can be prevented because "they exploit well-known vulnerabilities," Winkler said. Managers can track the latest known software security breaches on the Internet through newsgroups, World Wide Web sites or mailing lists (such as bugtraq at bugtraq@netspace.org).

Winkler described audits he has performed where he posed as a company's security head and acquired employee IDs and passwords. In one case, he claimed to work for an executive and got a list of newly hired workers. He then called each one for a bogus "security check" and asked for password data. In another audit, he forged an application for a network smart card and thwarted the authorization security.

"Nobody detected anything," he said. "I think detection is more important than prevention." With prevention, a company may not be sure what mischief has been averted, but detection allows administrators to find security holes and check what damage has been done.

"Maybe you feel better paying consultants to tell you, 'Use what you have,'" he said. "It is the simple, everyday things that get exploited." — Sharon Machlis



Self-proclaimed hackers (from left) Dominique Brezinski, Sluggo, Jeff Moss, Simon Gardner and Chris Goggans bristle at accusations that tools they develop spawn malicious attacks by teen-agers on the Internet

formation systems managers who attended a "meet the enemy" session during a security conference called the Black Hat Briefings weren't convinced.

"The hacker by definition is based on natural curiosity," said Sluggo, who has an information

who edits the popular hacking journal *Phrack*. "You have a constantly burning desire to learn something new, and when you do, you're damned stoked about it."

The hackers bristled at accusations that tools they develop

"clueless teen-agers" who use hacking tools posted on the Internet as the real enemy of corporate administrators.

While acknowledging that those teens wreak havoc with their tools, the hackers said systems administrators who keep up with the latest bug reports and patches should be able to close holes before Internet surfers find them.

The panelists also cautioned systems administrators that hackers are going to keep on hacking. "NT is going to be a big stomping ground in the next year," said Artimage, who does

some work for a computer security group at Purdue University in West Lafayette, Ind. "It's suddenly very sexy to play with."

Hackers may also turn their attention to finding holes in intelligent hubs. "None of the network management protocols are very secure," he said.

A representative from Microsoft Corp. said he was resigned to the ongoing cat and mouse game between hackers and software makers.

"Everybody can do better: They can do a better job breaking in; we can do a better job defending," he said. □

McAfee boasts 'net virus protection

By Frank Hayes

PROTECTION FROM Internet-borne viruses is coming into its own.

McAfee Associates, Inc. this week will announce a utility for protecting World Wide Web surfers against hostile Java and ActiveX components.

WebScanX, a \$39 utility slated to ship in August, will scan Internet components as they are downloaded to see if they match any of a library of "virus signatures."

HOW IT WORKS

The utility also monitors the components as they run, watching for hostile behavior such as deleting files or grabbing system resources.

Hostile ActiveX and Java components aren't yet a widespread problem. But concerned net-

work administrators are using firewalls and other security tools in efforts to keep their networks safe — often blocking Java and ActiveX entirely, users said.

"Many Internet users are not really aware about the danger on the desktop," said David Kindree, new services development manager at British Columbia Telephone Co. in Burnaby, British Columbia. "And for network managers, it's a catch-22 — people want the functionality, so it's hard to turn off."

The desktop-based WebScanX offers finer-grained examination of Internet components than firewalls can provide, according to Santa Clara, Calif.-based McAfee.

The utility also protects against hostile — or simply buggy — components installed behind the firewall. It protects mobile users as well.

"Right now, unless I'm running a full-blown firewall on my laptop, [firewall protection is] not going to do me a lot of good when I'm on the road," said Richard Perlotto, corporate network security manager at VLSI Technology, Inc. in San Jose, Calif.

Smaller vendors, including Finjan, Inc. in Santa Clara, Calif., and Digitivity, Inc. in Los Altos, Calif., already offer products similar to WebScanX. But the new product should bring the credibility of a major vendor to solving the problem, according to one analyst.

"It mainstreams Java and ActiveX security," said Ira Machefsky, an analyst at Giga Information Group in Santa Clara, Calif. "It's 80% protection against hostile mobile code bundled free in a product you're buying anyway." □

Systems vendors share technology for NT clustering

By Jaikumar Vijayan

SYSTEMS VENDORS continue to exploit a Microsoft Corp. weakness by offering the high-availability Windows NT clustering technology that customers demand.

Starting this week, NCR Corp. will license its LifeKeeper fault-resilient software for Windows NT to other hardware manufacturers and channel partners.

NCR, in Dayton, Ohio, also will launch a program to help independent software vendors build fail-over and recovery capabilities for their NT applications.

Support for high-availability clustering is crucial for information systems departments that

want to transfer mission-critical business applications to Windows NT.

NCR's move follows a similar effort by Tandem Computers, Inc. to license its ServerNet and ServerWare technologies. Both vendors are porting their venerable Unix clustering products to Windows NT and then licensing them.

Digital Equipment Corp. and Data General Corp. offer similar technologies but currently aren't licensing them to others.

The companies are trying to take advantage of Microsoft's delay in delivering some of these capabilities via Wolfpack. Originally scheduled for release earlier this year, Wolfpack is now slated for fall delivery.

"Microsoft still has to prove itself in this market, whereas all these other products have already been tried and tested" in Unix environments, said Bill Murphy, an analyst at The Standish Group International, Inc. in Dennis, Mass. □

Hyperion Software.

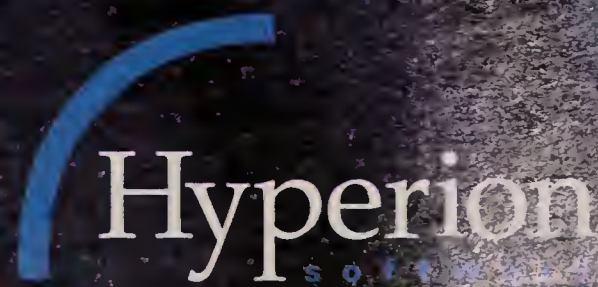
The freedom to say "Yes," the control to say "How."

*Hyperion provides
the independence to use
information freely—
without compromising
existing systems and
standards.*

As an IT professional, maintaining the integrity of your company's information infrastructure is your top priority. It's a priority that must take into account the needs of managers to access and use information freely, independently and to their best advantage. And in these terms, the best advantage you can give them is Hyperion.

Our comprehensive financial management solutions easily integrate into your infrastructure. End users get the information tools, business intelligence and freedom they need to listen to their business, and to understand what they hear. In fact, more than half of Fortune 500 companies are listening and hearing more clearly with Hyperion, right now.

To find out how, call us at 1-800-286-8000. Or visit our web site at www.hyperion.com.

The logo features a blue curved line to the left of the word "Hyperion" in a serif font, with "SOFTWARE" in a smaller sans-serif font below it.

Hyperion
SOFTWARE

Listen to your business.

AS/400 vendors reach for NT, Unix

By Tim Ouellette

SOME LONGTIME AS/400 software vendors aren't bleeding exclusively Big Blue anymore.

Instead, to better compete in the tight enterprise resource planning market, they are beginning to develop for Unix and Windows NT server.

"These vendors aren't departing the AS/400, but protecting user investments in the application software as other platforms become an option," said John Logan, an analyst at Aberdeen Group, Inc. in Boston.

For example, J. D. Edwards & Co. in Denver next month will ship the latest update to its OneWorld applications suite, which lets users work on Unix, Windows NT or the mainframe and integrates with the AS/400-only

World software suite.

This is a double-edged sword for loyal users of the venerable IBM midrange platform.

On one hand, it may seem to users that their main application vendors — the backbone of the AS/400's integrated technology selling point — are rushing from the AS/400. But at the same time, vendors can use the new revenue to better support existing AS/400 shops and integrate the AS/400 with other platforms.

"I intend to get all our data into relational tables no matter what — be it on Oracle [Unix] or the AS/400," said Douglas Chey, chief information officer at Broderbund Software, Inc., a J. D. Edwards World site in Novato, Calif. "Even though we plan to move to OneWorld in a

more client/server environment, it is probable that we will still stay on the AS/400 for a long time."

J. D. Edwards and U.K.-based JBA International Ltd. are also moving ahead to develop their own object technology to help transport data between platforms, even as they take part in IBM's San Francisco project, which focuses on cross-platform object technology, too.

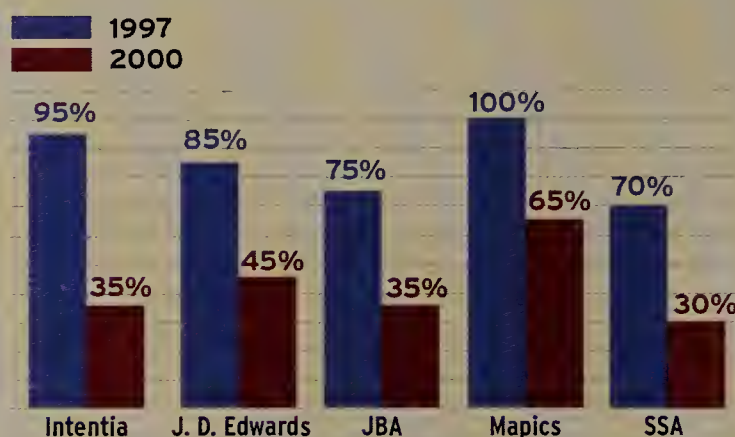
But the companies, each with about 4,000 AS/400 client sites, said their primary focus will remain on the AS/400.

"It's a smart decision on their behalf, so they are not creating a platform-dependent product," said Mike Terlizzi, president of Ballet Makers, Inc.

The Totowa, N.J., dance footwear and clothing company runs JBA's manufacturing software on the AS/400.

MORE THAN JUST AS/400

The estimated percentage of these software vendors' revenues from AS/400 applications will decrease as they focus on Windows NT development



Source: Gartner Group, Inc., Stamford, Conn.

But some observers said the focus on other platforms could change dramatically in a few years as Windows NT takes the lion's share of development dollars and revenue (see chart).

"IBM needs to expand the number of AS/400 third-party developers to attract more new users," said Bruce Bond, a research director at Gartner Group, Inc. in Stamford, Conn.

Two new players that have taken the bait for the AS/400 include SAP AG and PeopleSoft, Inc. [CW, July 7].

But installation has been hampered by scalability problems with SAP's R/3 and a long testing cycle by PeopleSoft. □

Bay switch could cut net costs

By Bob Wallace

BAY NETWORKS, INC. users now can save big when connecting switched Ethernet LANs to Asynchronous Transfer Mode (ATM) backbone networks.

Bay's C50N switch can funnel 16 lines of LAN traffic through two on-ramps and onto a high-speed ATM highway. Users who have ATM backbones and are deploying switched Ethernet need those features.

The C50N costs \$9,995.

Previously, Bay didn't have a low-end Ethernet workgroup switch that could do that affordably. Users had to use the larger and more expensive C100, which costs about \$16,000.

"We use C100s to do this now, but we're seriously looking at the new switch because it can save us money," said Joe DaCosta, director of network management at Human Resources Development Canada in Ottawa. "We have a building that we're rewiring, and I can see considering the C50Ns there."

The C50Ns will let users extend ATM connections from the data center to the workgroup from which huge data streams now emanate. Users also can off-load the conversion of Ethernet frames to ATM cells from data center switches.

"Packing these capabilities into an affordable box will help drive deployment of ATM," said Skip MacAskill, a senior analyst at Gartner Group, Inc. in Stamford, Conn. □

Debate over domain-name registration heats up

► DOJ opens Network Solutions investigation

By Matt Hamblen

CALL IT www.uproar.org. The debate over how to register Internet addresses grew noisier and more complicated last week.

Two federal agencies entered the fray, and an international agreement on future Internet domain registration came under vigorous attack.

For corporate webmasters, the moves add more uncertainty

to the already messy process of getting and protecting Internet domains.

The U.S. Department of Justice opened an antitrust investigation into the business of registering Internet addresses.

Officials at Network Solutions, Inc. in Herndon, Va., which has a near-monopoly on domain registrations, said it had received a Justice Department request for documents.

Meanwhile, the U.S. Depart-

ment of Commerce has asked the public to post comments at www.ntia.doc.gov — until Aug. 18 — on ways to improve the Internet domain registration process. The National Science Foundation first authorized Network Solutions as the domain registrar in 1993, but that agreement ends in March and won't be renewed.

WHO'S THE BOSS?

The question now is who will subsequently govern the Internet addresses that corporations depend on for electronic mail and World Wide Web commerce.

The now-defunct International Ad Hoc Committee (IAHC) presented an accord in Geneva in April that calls for multiple registrars around the world and seven new top-level domains, including .firm and .store.

But last week, a new group called the Open Internet Congress (OIC) met in Washington to plot against what it called the IAHC "takeover" of the Internet. Critics said the IAHC accord was created by a self-appointed clique that didn't use an open process. Others said seven domain names with unlimited registrars will be confusing and require companies to register multiple names to de-

fend a trademark.

"The IAHC plan is really an amateurish market ploy" by people who want to profit from selling registrations, said Andy Sernovitz, president of the Association for Interactive Media, a nonprofit group in Washington that represents 300 new-media companies. The association convened last week's OIC meeting and will help hold an Internet "constitutional convention" in the fall at Comdex/Fall '97 or Internet World, he said.

One Internet veteran said the IAHC process is more open than critics say. Vinton Cerf, senior vice president of Internet architecture at MCI Communications Corp. in Washington, said, "Anyone is free to sign the [IAHC accord] and participate in discussions of the Policy Oversight Committee."

Cerf said the IAHC plan "needs work" but added that it seems to provide a more open registration process than other alternatives.

Sernovitz said the OIC isn't aligned with Network Solutions, although the registrar's parent company, Science Applications International Corp., is a member of Sernovitz's association.

"We don't think of [Network Solutions] as overwhelmingly evil," he said. □

Government contract?

One Internet commerce consultant doesn't like either the incumbent registrar for Internet domains or an international accord for providing new registrars.

He says the government should do the job.

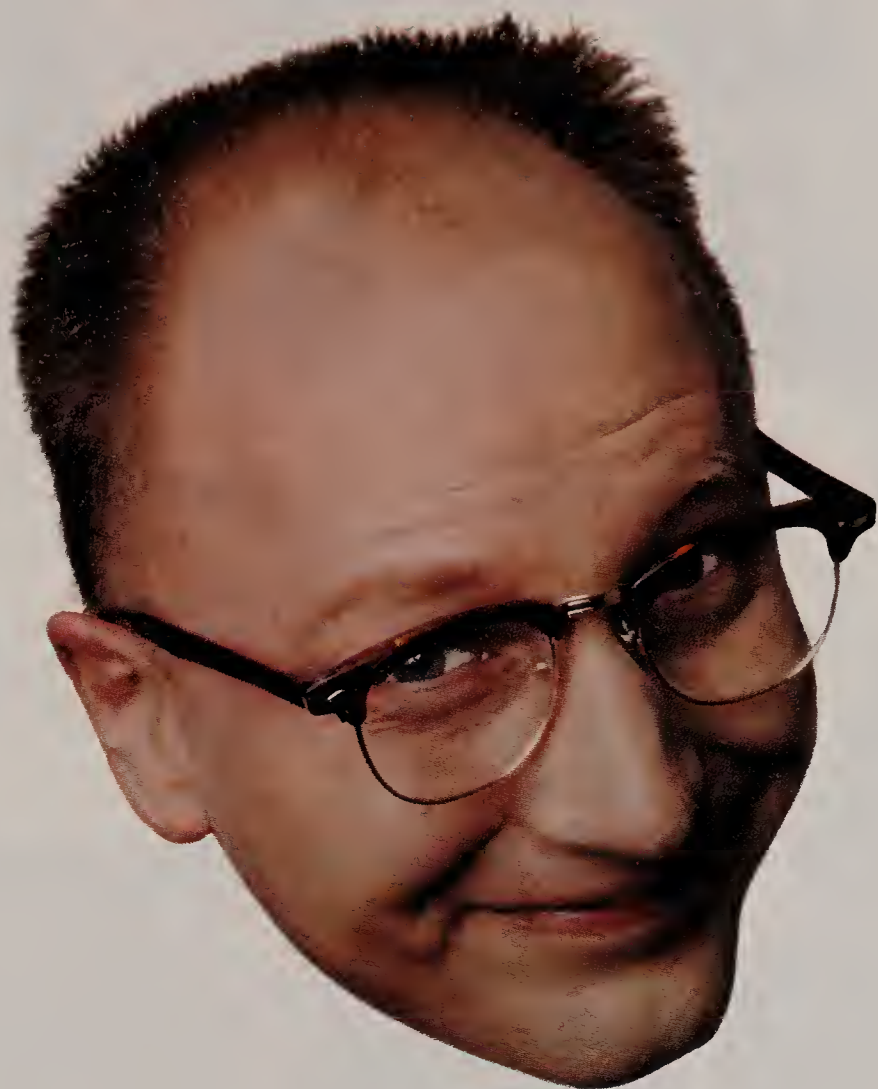
"I think it makes sense for the government to do registering, just like we register cars and guns," said Jim Sterne, president of Target Marketing, a consultancy in Santa Barbara, Calif.

"There should be a public database served by the public for the public — and why should anybody reap profit for that?" Sterne asked. "It's a critically important function, and it should be a monopoly of government."

Sterne said he isn't pleased with the International Ad Hoc Committee accord calling for seven new domain names and an unlimited number of registrars.

"Seven new domain names is an absolute nightmare," he said. "If I don't register my name under .firm, .com and all the others, I'm guilty of not defending my trademark."

— Matt Hamblen



**At the suggestion of our engineers,
the price of our Color LaserJet 5 has been slashed 33.33889%.**

We've lowered the price of our Color LaserJet 5 printer by \$2,000. That means that you can get the industry-leading color laser printer, with its low cost of ownership and cost per page, for only \$3,999. A mere fraction of the original price (66.66111% to be exact). For more information, log on today @ www.hp.com/info/colorljad6, or call 1-800-LaserJet, ext. 2347. ***Built by engineers. Used by normal people.***

Apple's parade of CEOs



1981*-1983
Jobs resigned in 1985, two years after bringing in Sculley as CEO.

*Jobs founded Apple in 1976 and was named CEO in 1981



1983-1993
Sculley championed the ill-fated Newton and was booted.



1993-1996
Spindler was ousted after he failed to make sales — and couldn't sell Apple to Sun Microsystems.

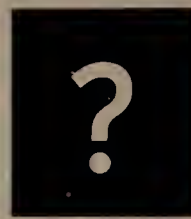


1996-1997
Amelio left few surprised when he was forced out by the board. He left for a Lake Tahoe vacation retreat with a \$3.5 million severance package.

Challenges facing the next CEO include Apple's return to profitability, regaining market share, forging ahead in research and development and cultivating a favorable public image for the company.

1997-? ▶

— Compiled by Mari Keefe



Enough is enough

CONTINUED FROM COVER 1

over the past year, some had already started migrating to Windows. That is more bad news for Apple, which most recently announced plans to focus on its current user base.

"As a manager, I would have no credibility if I went into the

folks I answer to and said, 'Let's make a renewed investment in the Mac,'" said Norman Eide, vice president of information systems at HDR Insurance Services LLP in Sacramento, Calif. The company is moving from the Macintosh to a Windows NT platform. "I think they lost it. In the business world, their window is shut," Eide said.

"Slowly but surely, we're moving toward Windows," said Mike Anderson, director of information systems at Sunnyvale, Calif.-based TRW, Inc. TRW's defense contract division uses 1,200 Macintoshes, and thousands of Macintoshes are used throughout the company.

"The group we're in hasn't pushed or endorsed the [Windows] standard yet, but day-to-day pressure pushes us more toward Windows," Anderson said.

"People are losing faith in [Apple]," said another information technology manager and Macintosh stalwart at a large aerospace company. He said his division will phase out more than 10,000 Macintoshes within three years.

Research from last year shows an increasing number of larger IS departments moving away from Apple, said Eric Lewis, an analyst at International Data Corp. in Framingham, Mass. At larger companies, "Mac is the minority platform, and it tends to lose out," he said.

Still, Joyce Croker, assistant systems editor at the *Los Angeles Times*, said she doubts the Macintosh is going away tomorrow. She said her IS department "is swinging everyone over to Microsoft," but the users who put out the newspaper would fight to keep their 650 Macintoshes because of their reliability and graphic capabilities.

But it is undeniably hard for even Macintosh diehards to avoid disillusion, considering that Amelio, 54, is the third

CEO bumped from the company in four years.

Apple's board of directors forced him to resign last Wednesday, citing their dissatisfaction with the company's performance. Also resigning was Ellen Hancock, Apple's executive vice president of technology. She had worked for Amelio at National Semiconductor Corp.

Fred Anderson, chief finan-

stock prices. The last straw for the board may have been the expected announcement this week of a third-quarter loss of up to \$100 million (see chart below).

While Apple struggles to regroup, users said they are worried about the company's future. Some industry observers said Oracle Corp. CEO Larry Ellison could prove to be Apple's savior. In March, Ellison had

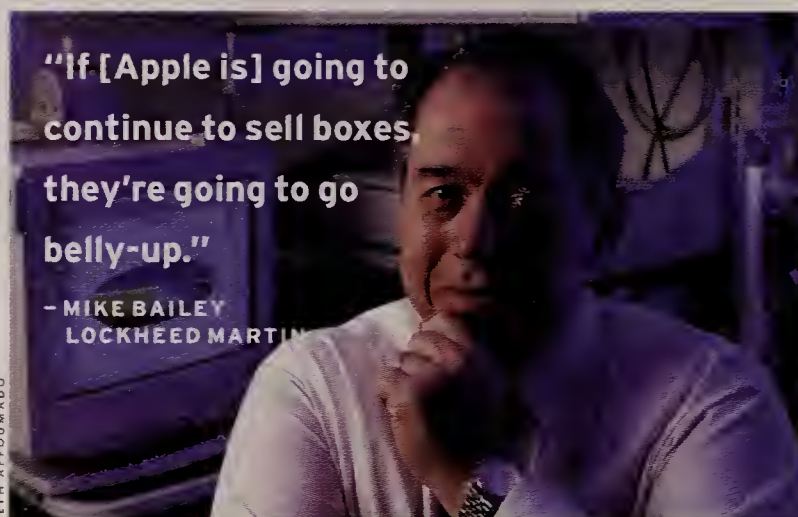
received \$3 million in salary and cash bonuses last year.

"They need a guy who has a lot better understanding of the consumer electronics market," said Ken Lim, a former Apple marketing manager and editor of "Cyber Media 2001," a newsletter in Cupertino. "Amelio was a semiconductor guy."

A new CEO must "get on a soapbox and proclaim something loud, clear and coherent about who Apple is and make the development community believe it's not wasting its time," said Steve Dube, an analyst at Wasserstein Perella Group. Dube said Apple has until next June to become profitable before its cause is lost.

Sun Microsystems, Inc. CEO Scott McNealy said "the best chance Apple has is to become the easiest and friendliest Java platform provider out there."

Mike Bailey, a systems analyst at Lockheed Martin Missiles & Space in Sunnyvale, Calif., said Apple doesn't have a future unless it completely changes its course. "They're dependent upon hardware sales — not software," he said. Future cloning will only hurt the company more, he said. "If they're going to continue to sell boxes, they're going to go belly-up." □



cial officer at the Cupertino, Calif.-based company, will take over daily operations until a new CEO is hired. That should take three to six months.

JOBS RETURNS

Meanwhile, Apple co-founder Steve Jobs' role will be expanded to "strategic adviser." Jobs, who himself was Apple's CEO, rejoined the company after Apple bought his company, Next Software, Inc., for \$425 million last December.

Current plans call for him to oversee product strategy, marketing and sales. Some published reports said Jobs had lobbied for Amelio's departure.

Jobs and Amelio weren't available for comment.

When Amelio was hired, he vowed to return Apple to profitability. But during his tenure, the company's share in the worldwide PC market to dropped to 3%, from 6% early last year. A string of quarterly losses added up to more than \$1.6 billion, which triggered massive layoffs and record-low

stock prices. The last straw for the board may have been the expected announcement this week of a third-quarter loss of up to \$100 million (see chart below).

There are few obvious candidates to succeed Amelio, observers said. Though some questioned why anyone would want the job, analysts noted the potential hefty salary. Amelio re-

How bad is it?

Stock value

Closing at 13-5/16 Thursday, the company's stock is at a 10-year low, analysts said.

Brain drain

Apple has laid off 4,500 people since January 1996 and gone through four CEOs in 16 years. A steady exodus of executives continues.

PC market share

The number of Apple computers shipped and sold during the second quarter of 1997 dropped 15% from last year's levels, according to Computer Intelligence.

Apple's PC market share has fallen from 6% last year to just 3% this year.

New sales

According to Dataquest, a mere 5% of new computer purchases are Apple computers.

Losses

During Amelio's tenure, Apple's losses totaled more than \$1.6 billion. This week it is expected to post a \$70 million loss for the second quarter of 1997.

— Compiled by Mari Keefe

String of missed opportunities turned off corporate users

Oct. 1991 Apple, IBM and Motorola announce plans for Taligent operating system, Kaleida multimedia systems, Power Open environment and PowerPC chip. All fail to go anywhere, except the PowerPC chip. Although Apple uses the chip, it fails to become an industry standard.

Aug. 1993 Apple ships first Newton handheld device.

Jan. 1995 The company belatedly agrees to license Mac OS to clone makers.

May 1995 Apple shows off first version of Copland, its answer to Windows 95. New operating system slated to ship mid-1996.

Aug. 1995 Microsoft ships Windows 95 and dominates the desktop. Power Computing ships cheaper, faster Mac clone.

April 1996 Apple's Copland delayed until 1997.

May 1996 PowerBook recall. Apple's laptop market share plummets.

Dec. 1996 Apple buys Next Software, says new operating system based on Next technology will ship mid-1998.

May 1997 Apple spins off Newton, which dropped from 23% market share in 1995 to 9% in 1996.

July 1997 Exodus of top Apple talent continues.

Borland users await turnaround strategy

By Sharon Gaudin

USERS SAY it is time for Borland International, Inc. to show them exactly how the financially troubled company plans to stay afloat.

Borland, a high-end application development tool maker, lately has garnered more publicity for its financial slips and spills than for its cutting-edge products. Users said they will look for signs that the Scotts Valley, Calif., company is turning things around at this week's user conference in Nashville.

Borland's financial troubles

	Revenue	Profit/loss
1993	\$464M	-\$49.2M
1994	\$393.5M	-\$69.9M
1995	\$254.1M	-\$12.2M
1996	\$215.2M	-\$14.3M

"I'm concerned about Borland's very existence. Most definitely," said John Brush, a senior analyst at the California Department of Mental Health in Atascadero, Calif. "The real hope among the Borland patriots is that it'll be bought out. I think that would be best."

A Borland spokesman said CEO and Chairman Delbert Yocam will outline the company's strategy at the user conference but refused to say what that strategy might include.

STAGE SET FOR COMEBACK

Evan Quinn, an analyst at International Data Corp. in Framingham, Mass., said Borland is positioning itself for one more comeback push. "Yocam has set it up so they can take one good shot at a new Borland," he said.

Quinn noted that the company has a good chance. "They've opened themselves up from just retail to corporate markets. They got \$25 million in equity financing. [They] cut down their workforce by 30%. With a Java tool and tools for the AS/400 platform, [Borland is] no longer only Windows-platform aligned. You can begin to see all the pieces of the puzzle," he said.

Borland, the maker of the popular Delphi development tool, began having troubles several years ago that eventually led to the ouster of founder Philippe Kahn. Its revenue has been cut in half — from \$464 million in 1993 to \$215 million last year. Analysts said there are several reasons behind the company's most recent failures. Several noted that Delphi and Borland's C++Builder are very similar to each other, which doesn't give customers much of a choice.

Users and analysts also said Borland is running behind the pack with Java tools. The company is working on J++Builder, a Java tool. Other developers, such as Sy-

mantec Corp., Sun Microsystems, Inc. and Microsoft Corp., already have products on the market. Borland's product is still being tested.

Borland also has been criticized for not differentiating its Delphi product from

Microsoft's extremely popular Visual Basic.

Tom DiGrazia, a product manager for electronics and software at the Chemelex division of Menlo Park, Calif.-based Raychem Corp., said he has his doubts about

Borland's survival but not about Delphi's.

"Actually, I'm not worried all that much," said DiGrazia, who has been using Borland products since 1985. "The Delphi program will be picked up by somebody if Borland fails. Symantec or Novell, [Inc.] or someone will pick it up and act as a parent. Today, it's more powerful than anything I've used in the past." □

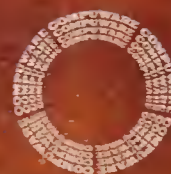
It was supposed to be the launch of a development project...

Not the project manager.

Should've used UNIFACE

It's more than a development product. It's a complete solution to put complex enterprise applications into production — from legacy to client/server to the Internet. Ask any of our 3,000 worldwide customers.

For a white paper on creating enterprise systems for the Internet, call us.



COMPUWARE

www.compuware.com

1-800-365-3608

uniface_info@compuware.com



ANYTIME TWO COMPANIES LIKE

COMPAQ AND MICROSOFT

get together

YOU CAN EXPECT A LONG LIST OF

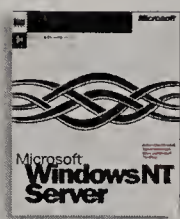
IMPRESSIVE RESULTS.

SAY WE START WITH \$1,000 IN SAVINGS.



Compaq
ProLiant 2500

+



Microsoft
Windows NT®
Server

+



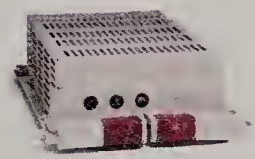
Microsoft®
SQL Server™

+



SMART-2 Array
Controller

+



4.3GB or 9.1GB
hard drive



Buy a Compaq ProLiant 2500, Microsoft Windows NT® Server, SQL Server,™ SMART-2 Array Controller and a 4.3GB or 9.1GB hard drive and get \$1,000* off the total purchase price.

THIS *exceptional* OPPORTUNITY FOR SAVINGS AND EXTRA VALUE IS *only* AVAILABLE UNTIL JULY 31ST.

See your reseller, or for the one nearest you call 1-800-853-9526, or visit us at www.compaq.com

COMPAQ  **Microsoft®**

FRONTLINE PARTNERSHIP

*All prices and price reductions shown refer to U.S. estimated reseller prices. Actual reseller prices may vary. Free offer with purchase of qualifying product from a participating reseller from 4/28/97 to specified end date, while supplies last. Offers not valid on Compaq ProLiant 2500. All others are subject to product availability, and are valid only in the U.S. Compaq reserves the right to change, alter or cancel these programs at any time without notice. ©1997 Compaq Computer Corporation. All rights reserved. Compaq registered U.S. Patent and Trademark Office. ProLiant is a registered trademark of Compaq Computer Corporation. Microsoft, Windows NT, and Microsoft SQL Server are registered trademarks of Microsoft Corporation. All other brands and product names are trademarks or registered trademarks of their respective owners.

States expect big savings from data center consolidations

By Patrick Thibodeau

ARMED WITH CONSULTANT studies that promise jackpot-size savings, California and Pennsylvania plan to consolidate their respective data centers.

But they will follow separate paths:

Pennsylvania will outsource its operation; California will not.

The California study estimated the state will save \$50 million to \$85 million over the next decade by consolidating its 12 data centers.

Pennsylvania said it can save up to

\$127 million over five years by merging 18 data centers.

But the California study, prepared by Deloitte & Touche Consulting Group for the state Department of Information Technology, found no savings benefit from outsourcing the data center opera-

tions to a private vendor.

"Government can no longer have these isolated systems," said John Thomas Flynn, California's chief information officer, who spearheaded the project.

The savings in California's consolidation plan will come from reduced costs for hardware and software maintenance and lower personnel costs. The consolidation could affect about one-third of the 2,000 state data center employees, but not necessarily through layoffs.

California needs to hold on to its information technology talent and fill vacant jobs. "We're losing people like mad to Silicon Valley," said Rich Halberg, assistant director of the state Department of Information Technology.

Workers may be reassigned to other jobs, such as the year 2000 problem, Flynn said.

"Government can no longer have these isolated systems."

**- John Thomas Flynn,
California's CIO**

Pennsylvania, however, wants out-sourcers to worry about filling jobs. "Do the most up-to-date talent come to the state and stay here?... With the outsourcers, we're always going to make sure," said Tom Paese, Pennsylvania Secretary of Administration in Harrisburg, which oversees state IT operations.

Affected employees said they are nervous. "We've been waiting on pins and needles just to find out what is going to be in the report," said Vic Newquist, the data center director with the State Treasurer's office in Sacramento, Calif. But he said employees aren't worried about a sudden layoff.

Newquist said it will take three to four years to implement the study's recommended changes. In the meantime, his department, which supports 250 users, has been running ongoing training programs to prepare its staff for changes in their job duties.

Other states that have consolidated data centers have saved money, according to John Kost. As CIO in Michigan, Kost launched a project in 1995 that consolidated 15 data centers into one.

"It was a huge savings, and that was just on the cost of operations buying the computers, keeping the software maintained and the licenses and staffing of it," he said.

The state exceeded its estimated cost savings of \$15 million over five years, he said. But the real economies came from a boost in the productivity of staffers who were freed up to do application development.

"I have yet to find a circumstance where consolidation did not make financial sense," said Kost, an analyst at Federal Sources, Inc. in McLean, Va. □

STOLEN BY MORE
MANAGERS
THAN ANY OTHER
IT PUBLICATION.



©1997 Computerworld, Inc.

Every week, almost a million IT Leaders read Computerworld religiously.

And from what we hear, some people will do anything to get their hands on Computerworld. They'll remove it from the company mail-room or even right off their colleague's (or boss') desk.

So you ask, what's so special about Computerworld?

Is it the solid reporting? Maybe

it's rigorous analyses of industry trends? Straight talk, whatever the subject...product reviews, software problems, feisty editorials, career management articles or the hottest news?

In this industry one thing is clear. You've got no time to waste. You can't wait to read someone else's copy of Computerworld.

So come join the ranks of the

super-informed. Those who get the news first.

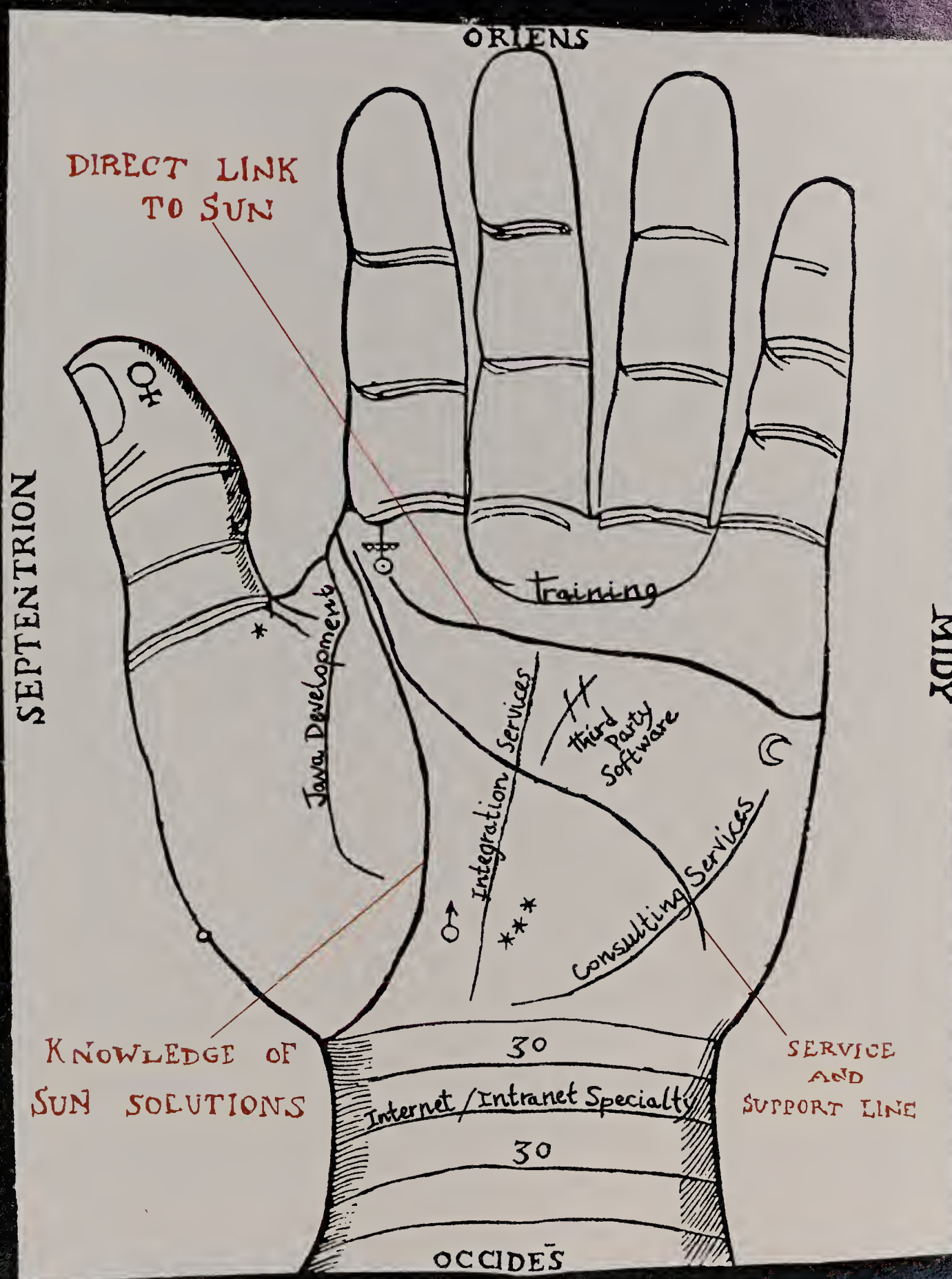
Order today and you'll receive 51 information-packed issues of Computerworld.

Call us at 1-800-343-6474 or visit us on the world wide web at www.computerworld.com.

To order by mail, use the postage-paid subscription card bound into this issue.

COMPUTERWORLD
The Newsweekly for Information Technology Leaders

Your future lies in the palm of their hand.



Sun Certified Resellers are your direct link to Sun. They're the ultimate resource for customizing Sun solutions to fit your business. And they'll keep those solutions running smoothly, with unmatched service and support. Every Sun Certified Reseller is trained within their certification category – Enterprise, Workgroup, or Specialty. So look for the Sun Competency Certification logo when selecting your business solutions. Because when you get a hand from a Sun Certified Reseller, you get one very bright future at no extra charge. **THE NETWORK IS THE COMPUTER™**



© 1997 Sun Microsystems, Inc. All rights reserved. Sun, Sun Microsystems, the Sun Logo, and The Network is the Computer are trademarks or registered trademarks of Sun Microsystems, Inc. in the United States and other countries.

**You'll have to build
all your customers, partners
world sometime**

{ Well actually, sometime

We can help. Consider our credentials.

Cisco networking technologies built the Internet. More than 85% of all Internet traffic travels via Cisco products. Our hardware is the backbone of the largest and most sophisticated corporate and commercial networks in the world. And Cisco IOS™ software has become the open standard by which all computer and networking systems can communicate, regardless of their origins or protocols.

Plus, we back every network we build with one of the strongest customer service programs in the industry.

an intranet that links and employees around the before the year 2000.

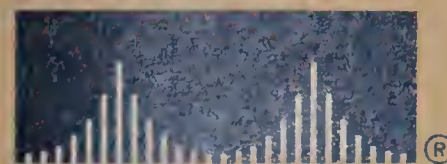
in the next 3 months. }



All of which makes us uniquely positioned to help you meet the demands and deadlines of your intranet challenge, regardless of the size of your business. Because chances are we've already successfully faced many of the issues and challenges you're facing today.

Find out more. Call us at 1-800-778-3632 ext. 96000 or visit us on the Web at www.cisco.com. We can help you move the world.

CISCO SYSTEMS



The Network Works.
No Excuses.

Users hold off on 56K modem investments

► High costs, lower-than-expected speeds and lack of standards have been cited

By Kim Girard and Mindy Blodgett

ALAN JARASHOW, project manager for remote communications at Nabisco, Inc.

in Parsippany, N.J., did his homework on 56K bit/sec. modems.

He discovered it would cost \$100,000 to invest in modem pools necessary to

upgrade to 56K bit/sec. And up to 20% of his 4,000 remote users are in rural areas where they would have a "one-in-a-billion chance" of really getting data at 56K

bit/sec., despite the investment.

Faced with those cost and performance problems, Jarashow and other corporate network managers shy away from adopting 56K bit/sec. modems, analysts said.

But some Internet service providers have forged ahead anyway. America Online, Inc. in Vienna, Va., said it will support 56K bit/sec. modems in 120 cities by Aug. 31.

And Netcom On-Line Communication Services, Inc. in San Jose, Calif., supports the speed in 40 cities.

TESTING 1, 2, 3

How to tell if a phone line can support 56K bit/sec.

1. Hook up a V.34 modem
2. Go into a terminal window
3. Dial (888) 877-9248
4. Type in Line Test
5. Wait for report

But many other Internet service providers are waiting for a standard to be hammered out before they invest in new switches, which can cost \$100,000 to \$300,000 apiece.

"56K bit is a marketing bullet point rather than a reality for many users," said Dan Taylor, a senior analyst at Aberdeen Group, Inc. in Boston.

NOT UP TO SPEED

One big reason is that 56K bit/sec. modems don't deliver their promised speeds because of the spotty quality of local telephone lines, according to Dan Merriman, a vice president at Giga Information Group, a Cambridge, Mass.-based consultancy.

He said there are very few mobile users or telecommuters who use 56K bit/sec. modems. Those who do report speeds "in the mid-40s," Merriman said.

Corporate managers are asking, "Do I want to make this investment and find it doesn't really work because of the quality of the lines?" Merriman said.

That's a worry shared by Sheryl Olguin, lead software engineer at Harris Corp. in Palm Bay, Fla.

"We've been following it, but right now we just don't think the phone lines are good enough to get true 56K technology," Olguin said. "I think eventually it will be cost-effective technology, but we are waiting it out." □

When will her education be as technologically advanced as her toys?



Technology. It's moving fast. And our schools are falling behind. Why? Lack of funds. Lack of resources. Lack of expertise. That's where your company comes in. By supporting Tech Corps. A grassroots effort to



enhance teaching and learning through technology. And give students the advantage they need to get ahead in the game of life. Discover the rewards of becoming a Tech Corps Corporate Sponsor. 508/620-7751 • <http://www.ustc.org> America needs to know.

Organizations already providing national sponsorship include Cellular Telecommunications Industry Association Foundation (CTIA), Digital Equipment Corporation, and MCI Foundation

**TECHNO
TOYS**

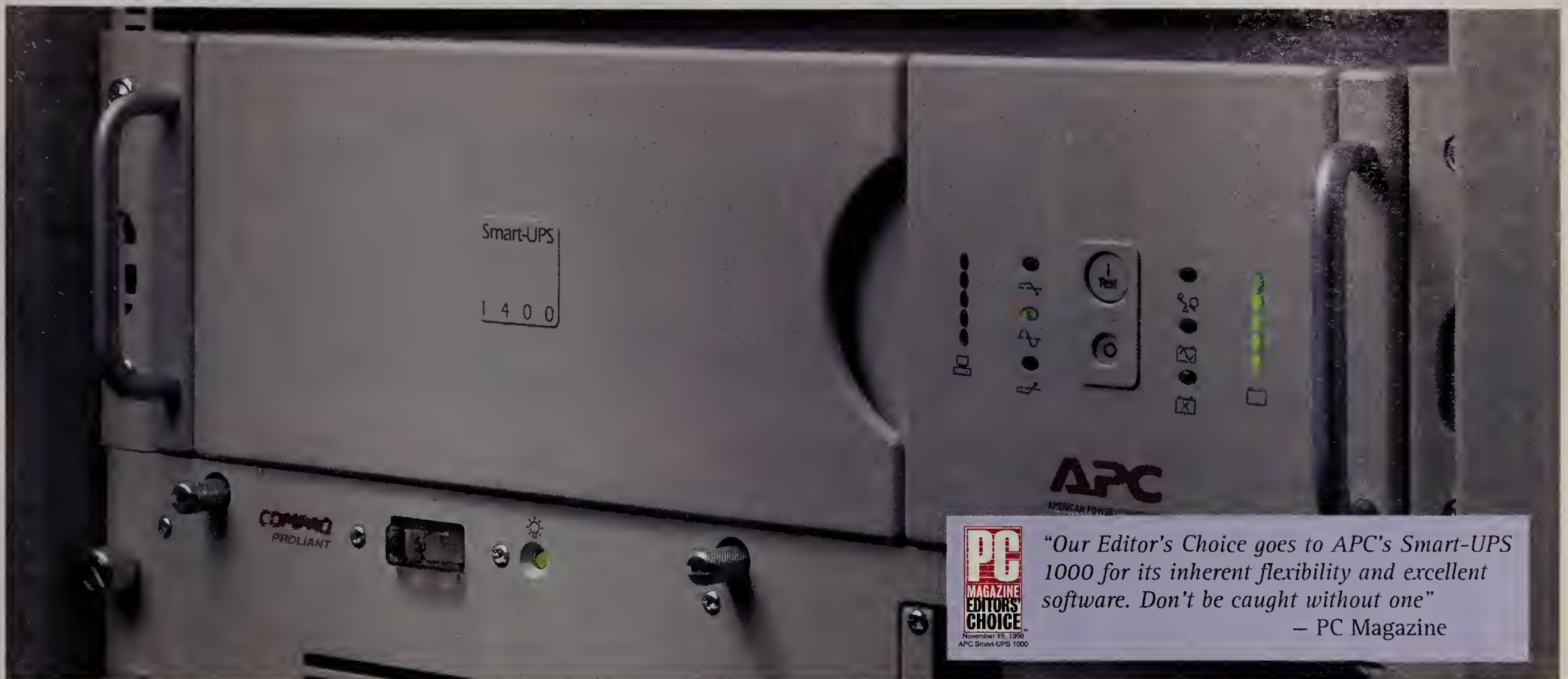
**Win a Cool Prize
Every Week!**

Enter the TechnoToys
Sweepstakes in
Computerworld
Marketplace

(following IT Careers)



Now that APC Smart-UPS® RM includes FREE web-enabled PowerChute® *plus*, rack mount server protection has never been easier



Power problems attack networks relentlessly. To protect hardware and data from system crashes, experts, network managers and computer users worldwide prefer one solution above all others combined: APC Smart-UPS. Now, all 120V Smart-UPS include FREE PowerChute *plus* power management software.

The most reliable protection you can buy

Smart-UPS provide complete protection against power spikes, surges, brownouts, and blackouts. You'll also gain maximum server up-time and decrease management costs. Award-winning features include:

- CellGuard™ intelligent battery management monitors battery performance and extends battery life.
- SmartSlot™ internal accessory slot lets you customize and enhance the performance of your Smart-UPS.
- QuickSwap™ user-replaceable batteries can be quickly and safely swapped out without powering down the connected equipment.

Plan for and control crisis situations

PowerChute *plus* FlexEvents™ lets you control UPS reactions to power events. You can configure

PowerChute *plus* to provide graceful, unattended server shutdown during an extended power outage or alert you to out-of-bounds environmental conditions before they result in costly downtime.



PowerChute *plus* provides unattended system shutdown and UPS management for Windows NT, Netware and other servers. Manage Smart-UPS via SNMP, DMI and Web browsers (shown above). Features vary by operating system.

Web server & SNMP ready

APC's NEW WebAgent™ allows you to monitor and manage your Smart-UPS using your Web browser. New WebAlert™ notifies users of Web server shutdown via their browser. PowerChute *plus* also includes the PowerNet™ SNMP Agent plug-in, which allows

you to integrate your Smart-UPS with your existing SNMP management strategy.



New NetShelter™ offers the perfect housing for Compaq® and other rack-mounted servers or internetworking equipment. Designed for easy selection, installation and expansion, NetShelter integrates APC's power control and environmental management solutions in one easy to order solution.



Smart-UPS and PowerChute *plus* provide the complete solution in one convenient box. Server protection and peace of mind have never been easier.

Trade-UPS!

Fax or mail this coupon to APC and learn how you can easily trade in your old UPS for discounts towards a new Smart-UPS.

☐ **YES!** I'm interested in trading up an older competitor's or APC UPS to Smart-UPS. Please send Trade-UPS info.

☐ **NO,** I'm not interested at this time but please send my FREE power protection handbook.

Name: _____

Title: _____

Company: _____

Address: _____

City/Town: _____

State: _____ Zip: _____ Country: _____

Phone: _____

Brand of UPS used? _____ # _____

Brand of PCs used? _____ # _____

Brand of Servers used? _____ # _____



Dept. A8-RM

(888) 289-APCC x7066

Fax: (401) 788-2797

<http://www.apcc.com>

©1997 APC. All Trademarks are the property of their owners. SU30ET • (800)347-FAXX PowerFax • CompuServe: GO APCSUPPORT • E-mail: apcinfo@apcc.com • 132 Fairgrounds Road, West Kingston, RI 02892 USA

APC has won more awards for reliability than all other UPS vendors combined.



The Perfect Of High Av And High Ma



t Marriage ailability nageability.

Tandem and Computer Associates have joined forces to deliver a new, higher standard in fault-tolerant computing across distributed, heterogeneous computing environments. Working together, the companies offer integrated solutions for critical enterprise management challenges.

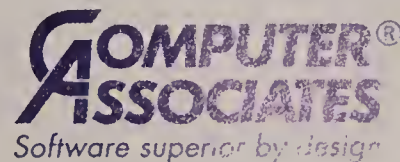
For both Tandem and CA clients, this new alliance offers a wealth of benefits. Through CA's Unicenter® TNG,™ Tandem clients have access to a fully integrated and open network and systems management solution that enables them to seamlessly manage Tandem® systems as part of their global networks. CA clients benefit from the unmatched levels of system reliability and scalability provided by Tandem's NonStop® servers. For the first time, the alliance will extend fault tolerance to multi-platform environments. The combination of the proven enterprise management capabilities of Unicenter TNG with Tandem's high availability and clustering technology brings fault tolerance to both Windows NT® server and UNIX® systems-based platforms.

If you have zero tolerance for downtime and want to make it easier to manage your enterprise IT environment, call us today to find out what this exciting new alliance can do for you.

For More Information Call 1-800-NONSTOP ext. 8110.



Business-Critical Management



©1997 Computer Associates International, Inc., Islandia, NY 11788-7000. ©1997 Tandem Computers Incorporated. Tandem, NonStop, "reliability, no limits," and the Tandem logo are trademarks or registered trademarks of Tandem Computers Incorporated in the United States and/or other countries. All other product names referenced herein are trademarks of their respective owners.

High tech fuels NASA mission on Earth, Mars

Millions drop in on Pathfinder site

By Mitch Wagner

MORE THAN 4 million people each day last week left planet Earth to visit Mars.

They took a shortcut, of course, via one of the most popular sites in the history of the World Wide Web. The NASA-run site displays pictures and information from the unmanned probe Pathfinder.

The Web site, at mpfwww.jpl.nasa.gov, saw 220 million hits, or 22 million individual visits, between Pathfinder's landing on Mars at 10 a.m. July 4 and last Tuesday afternoon. The enormously high traffic left NASA straining to meet the Web demand, said Dave Dubov, Mars Pathfinder webmaster at NASA's Jet Propulsion Laboratory in Pasadena, Calif.

NASA handled the demand in part by using a big-bandwidth Internet connection. The agency has a 45M bit/sec. T3 connection to the Internet, an order of magnitude larger than Internet connections that serve entire corporate campuses. NASA is also handling the strain by using high-powered servers loaned by Silicon Graphics, Inc.

The servers are backed by more than 20 mirror sites around the world that carry copies of the site, Dubov said.

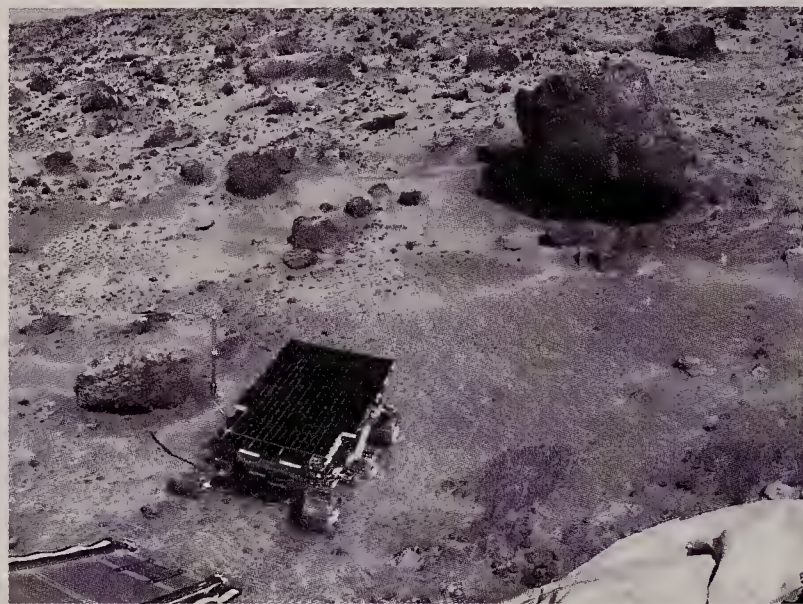
"Our goal was to provide a virtual presence on Mars to let the public join us here and see the beautiful images and be able to see what the engineers were seeing," Dubov said.

The Pathfinder site offers an archive of Mars images, live In-

ternet video feed from NASA's cable television station and a virtual reality mock-up of the Mars landing site written in Virtual Reality Modeling Language.

est to encounter brief but huge popularity in conjunction with headline-making news. When the Heaven's Gate cult committed mass suicide earlier this year, 'net-heads worldwide flooded servers with requests to log in to the cult's site; the group worked as Internet consultants.

IBM last year posted results from the Summer Olympics on the Web, but systems errors pre-



The Mars rover Sojourner, after leaving Pathfinder's ramp, approaches the rock known as Barnacle Bill (left)

vented journalists from logging in to the site to pick up results. □

The Pathfinder site is the lat-

est to encounter brief but huge popularity in conjunction with headline-making news.

& NASA uses Java applet to convey Pathfinder photos from Mars. Page 53

IBM RS/6000 guides spacecraft

By Tim Ouellette

BIG BLUE has landed on the Red Planet.

In the latest example highlighting the box's high-end capabilities, an altered version of IBM's RS/6000 processor is running the show aboard Pathfinder, NASA's lander currently exploring Mars.

The inclusion of the RS/6000 in a deep space project is evidence that NASA is serious about cutting costs and speeding up projects to explore other planets.

Deep space missions typically take 10 to 12 years to arrange and billions of dollars to put together. But the Pathfinder project went from concept to launch in three years — at a relatively paltry cost of \$170 million.

The only customization required was altering the RS/6000 to protect the specially designed RAD 6000 from massive space radiation. Lockheed Martin Federal Systems in Manassas, Va., developed the RAD 6000.

"A major part of cutting down the project time line was the use of commercial technology. With

the choice of the RAD 6000, we were able to work with the operating systems and software immediately," said Lloyd Keith, the engineer in charge of procuring Pathfinder's flight computer and operating system at NASA's Jet Propulsion Laboratory in Pasadena, Calif.

In the past, the space agency designed a spacecraft's computer from the ground up, including the hardware, operating system and mission applications. With a commercial processor, the lab was able to immediately begin programming using Wind River System's, Inc.'s VxWorks real-time operating system.

22 MIPS AND RUGGED

The RAD 6000 has been in control of Pathfinder since Dec. 4, when the launch device separated from the spacecraft.

The RAD 6000 is the size and thickness of a pad of paper but can run at 22 MIPS. It must withstand radiation and temperature variations from minus 55 C to 70 C, along with the side effects generated by the vacuum of space.

"We have to prepare for an environment that is incredibly nasty. In space, you can't just blow air across a processor when it gets hot like in a PC," Keith said. □

IS weighs separate network for diagnosis, repair

By Patrick Dryden

CLIENT/SERVER networks have become so vital to business that some information systems managers want a separate network just for monitoring performance and fixing problems.

IS managers are under the gun to maintain service levels for users, but constantly gathering statistics can slow response times across the production network. And managers crave a back door to reach critical devices if the main link fails.

Drawbacks to such an approach include added cost and complexity, but some IS managers and consultants recommend working with a safety net.

"If all my management traffic runs over the main network and it goes down, then I can't diagnose the failure," said Bryan Bates, a senior analyst at Sup-

portNet Consulting, Inc. in Calgary, Alberta.

The "outside network" Bates built for the campus of a Canadian energy company connects servers and major internetworking devices. It lets operators "reach out and touch a failed component from another side,"

he said. The network also off-loads all the data-gathering activity of several monitoring tools, which lessens the impact on business traffic, he said.

Ernst & Young LLP is starting to recommend separate management networks so its clients can free bandwidth on the primary network and retain contact with critical devices, said John Parkinson, the consultancy's director of emerging technologies research. "If you want a lot of instrumentation, and you plan to actively manage performance, then that's the way to

go," Parkinson said.

Also, a secondary link to far-flung routers, for example, often will come in handy. "If you can't get to that router across the network, you must call someone to go punch its buttons," Parkinson said. "That's a real problem with the lack of support in remote sites, especially for organizations spanning the globe."

At Stanford University, network planners are moving to external collection of management data to remove that traffic from the backbone, according to Jay Kohn, networking production manager at the campus in Stanford, Calif. "We want the freedom to do more experimentation, testing and other activities without affecting the primary infrastructure," she said.

Managers of telephone and wide-area networks typically duplicate connections for emergency purposes. But the load

from management traffic doesn't worry too many IS managers right now. They said management traffic can be minimized by judiciously determining what most needs to be measured and how often.

"If you configure your tools properly, traffic won't be a problem," said Richard Weiss, architect of enterprise management systems at Charles Schwab & Co. in San Francisco. Building a second network for management purposes would be too costly, he said.

And it would add another layer of complexity, said David Brown, director of network services at The New York Times.

Brown said he can reduce management traffic by decreasing the polling interval for monitoring tools and adopting smarter probes that can summarize statistics on their own.

Eli Lilly and Co. is consider-

THE ONGOING DEBATE

IS managers look at the benefit of a separate network to link servers and critical internetwork devices for management functions

Pros

- Provides emergency access to remote gear
- Removes monitoring traffic from business network
- Serves as a backup path for user traffic

Cons

- Adds cost to current infrastructure
- Increases complexity of networks
- Weakens security

ing an outside management network to monitor concentrated points carrying lots of switched traffic, said Tom Reinse, telecommunications analyst at Lilly in Indianapolis. □



voice, meet data.
data, meet voice.

everybody, meet DEFINITY[®] ECS.

DEFINITY ECS seamlessly integrates voice, data and video. DEFINITY ECS lets you receive all your voice, data and video calls on one number. Combines voicemail, Internet access, etc. with email, data sharing. DEFINITY ECS also handles extra bandwidths, wireless, international standards, etc. And it's future-friendly.

For more info, contact Lucent Technologies.

We'll introduce you to a world of possibilities.

Lucent Technologies
Bell Labs Innovations

211 Mt. Airy Road
Basking Ridge, NJ 07920
www.lucent.com/enterprise
1 800 325-7466 Ext. 255



We make the things that make communications work.[™]

Computer Industry

Briefs

3Com to cut 800 jobs

3Com Corp. last week said it will lay off about 800 employees, or 4% of its workforce, during the next year as a result of its merger with U.S. Robotics. 3Com said it will cut overlapping positions, primarily in the corporate arena. The \$8.5 billion merger was completed June 12.

Higher profits at Yahoo

Yahoo, Inc. last week reported better-than-expected second-quarter profits, helped by growth in traffic on its World Wide Web site. The Santa Clara, Calif.-based company reported a profit of \$610,000, or 2 cents per share, compared with a loss of \$1.4 million, or 5 cents per share, in the same period last year. Revenue more than quadrupled to \$13.5 million from \$3.3 million in the same period last year.

Intel denies charges

Intel Corp. last week officially denied it had infringed any of Digital Equipment Corp.'s patents in the chip maker's first legal response to Digital's May 12 lawsuit. Filing in federal court in Worcester, Mass., Intel said Digital's patents weren't valid and asked the court to dismiss the case and force Digital to pay Intel's legal costs.

SAP predicts profits

SAP AG last week said it expects healthy second-quarter profits and sales when financial results are released July 24. The company said strong demand for its integrated business software and favorable exchange rates will let it repeat its first-quarter performance. But SAP also said growth rates in the following quarters are expected to slow down.

GE picks Novadigm

To manage software on its customers' PCs, GE Capital IT Solutions selected tools from Novadigm, Inc. in Mahwah, N.J. Novadigm's Enterprise Desktop Manager automates the deployment, configuration and maintenance of applications throughout large networks.

AEA sues former CFO over missing money

► Group goes public after repayment plan fails

By Matt Hamblen

THE AMERICAN Electronics Association (AEA) in Santa Clara, Calif., had hoped to take the quiet route to get its fired chief financial officer to pay back \$807,000 the association believes he embezzled over 12 years.

But when William Phillips Jr. failed to meet an agreed-upon June 30 deadline to repay the money, the AEA went public and filed a civil suit that seeks full restitution.

Last week's publicity from the lawsuit, filed July 3 in Santa Clara County Superior Court, prompted an official at the county district attorney's office to consider criminal charges.

"We're getting preliminary information about the case, but it's still very early," said Santa Clara County Deputy District Attorney Mark Hames, head of the economic crimes group.

Phillips, 54, who lives in Milpitas, Calif., couldn't be reached for comment.

In an arrangement with the AEA, Phillips agreed to pay the \$807,000, but he admitted no wrongdoing. His attorney, Stacy Shelton, said she had read the nine-page lawsuit against Phillips, but she wouldn't comment or discuss Phillips' whereabouts. Phillips has up to 60 days to present an official response to the civil case.

The AEA filed the lawsuit after Phillips paid \$250,000 to

the group but missed the deadline for the balance, AEA Chairman George Sollman said.

Phillips was fired in March from his \$144,000-per-year job after the AEA said it discovered he was making payments to a dummy information systems consulting organization that Phillips created called The Solutions Group. All the checks, written about once per month for 12 years, were below the thresholds of \$7,500 — and, later, \$5,000 — required for a second authorizing signature, AEA officials said.

Sollman, a board member for six years, said there has been some board hand-wringing over the incident. "I definitely feel I was buffaloed by Bill," Sollman said of Phillips. "He figured out our system and used it on us."

Sollman and AEA President William Archey, who arrived in 1995, said they instituted strong measures to prevent future embezzlement, including lowering

the amount of a check that can be written by one person from \$7,500 to \$5,000 in 1995 and, in March, to \$750.

Archey said the affair has detracted from last year's accomplishments by the AEA in pushing for tax legislation favorable to computer companies. The AEA's prime mission is to lobby

"I definitely feel I was buffaloed by Bill. He figured out our system and used it on us."

— George Sollman, American Electronics Association

state and federal officials on behalf of its 3,000 members, including the largest software and hardware makers.

The main lessons for other organizations to avoid insider theft, Sollman and Archey said, are to institute strict financial controls, especially on IS consultants, and find ways to hire honest people. □

Oracle charges into the middle-market battlefield

By Randy Weston

MIDDLE-MARKET companies are shaping up as the new battleground in the packaged application wars.

In the rush to sign up customers, vendors are busily rolling out programs to attract the previously ignored market segment. With the programs, vendors promise quick, inexpensive and relatively painless migrations to their products.

Judith Hurwitz, president of Hurwitz Group, Inc. in Newton, Mass., said those types of programs are essential for the middle market, which until recently had all but been ignored by SAP AG and Oracle Corp. as the vendors concentrated on Fortune 500 installations. Many smaller companies were handed off to third-party sales channels and consultants.

"The key difference between [midsize] companies and Fortune 500 companies is the [middle-tier firms] don't have the [information technology] staff to do the installations themselves, and they don't have the luxury of time," Hurwitz said.

ORACLE FASTFORWARD		
Module	Price	Availability
For 20 concurrent users		
Financials	\$450,000	3 months
Enterprise Resource Planning*	\$950,000	6 months
For 40 concurrent users		
Financials	\$650,000	4 months
Enterprise Resource Planning*	\$1.15M	7 months
For 60 concurrent users		
Financials	\$850,000	5 months
Enterprise Resource Planning*	\$1.35M	8 months
*Financial and manufacturing modules		

With these programs, the vendors do most of the work, and they can do it in short time periods — from three months to eight months, depending on the size of the organization (see chart).

RISK REMOVED

More importantly, much of the risk is removed for the user company because customization and massive re-engineering aren't part of the equation.

"The margin of error is very slim for these [smaller] compa-

nies," Hurwitz said. "In these midsize companies, there is no work-around — either you do it right or you go out of business."

Heavyweight Oracle is the latest to take the plunge. The Redwood Shores, Calif.-based company last week announced FastForward, a program that targets companies in the \$50 million to \$500 million range. It includes a core set of Oracle applications preconfigured for basic business functions, a predefined implementation plan, an Oracle Universal Database

Server, support and training.

FastForward is Oracle's answer to chief rival SAP's year-old ASAP program, which touts quick-and-easy implementation of SAP's R/3 system.

FastForward was designed for companies that want a quick migration to client/server with key business functions already configured to their business practices and that can postpone adding any other functionality or customizing the software until after the initial installation, Oracle officials said.

It also is limited to companies with no more than 100 users on a system located in a single organizational unit that uses one currency and one language. In other words, multinational companies in a highly distributed environment need not apply.

Core applications in the program include procurement, invoice payment and asset accounting on the financial side, and cost accounting, forecasting and order fulfillment for the manufacturing module.

Oracle is testing the program and plans a general launch by year's end. □

HOW DID WE BECOME A LEADER IN FAST ETHERNET HUB TECHNOLOGY IN JUST A YEAR?

- A) ENGINEERING GENIUS
- B) SUPERIOR PRODUCTS
- C) CAFFEINE
- D) ALL OF THE ABOVE

The answer, you might have guessed, is "d." Compaq is pioneering Fast Ethernet technology and making mass migration from Ethernet to Fast Ethernet simply effortless with a number of industry firsts. With the first dual speed 10/100 hub, you can forget about all those costly trips to the wiring closet. And the first segmentable, stackable 100 Base-T hub nestles comfortably into your current network and delivers drop-in Fast Ethernet access to your server. Now you can overcome cable distance limitations with the only standard-based solution, Smart Uplink. Ultimately, with Compaq Netelligent, you'll benefit from the broadest range of products that are reliable, affordable and offer the greatest price:performance. To learn more, visit us at www.compaq.com or call 1-800-544-5255.



*The Compaq Netelligent family of hubs:
1108 8-Port 100 Base-T Unmanaged, 3612 12-Port 100 Base-T w/FX, 2624 100 Base-T Managed*



But hurry, because in business these days,
it's survival of the fastest.

COMPAQ

Has It Changed Your Life Yet?

O P I N I O N

Mainframe deja vu Our industry needs a 12-step program to get over its

fear of old — no, make that “legacy” — technology. Witness the so-called return of the mainframe.

If that weren't so ludicrous, it would be funny. Where did it go? Admittedly, for a while there it was politically incorrect to admit to owning a mainframe, much less running your — gasp! — business-critical applications on one. But at many of the world's major corporations, that has always been true.

Corporate America never replaced its mainframes with networks of PCs. The reason? You can't replace an ox with 10,000 chickens, as Gartner Group analyst Jim Cassell observed some years ago. Even today, there is



little that matches a mainframe's throughput and horsepower when it comes to handling massive amounts of data while maintaining centralized control over corporate assets.

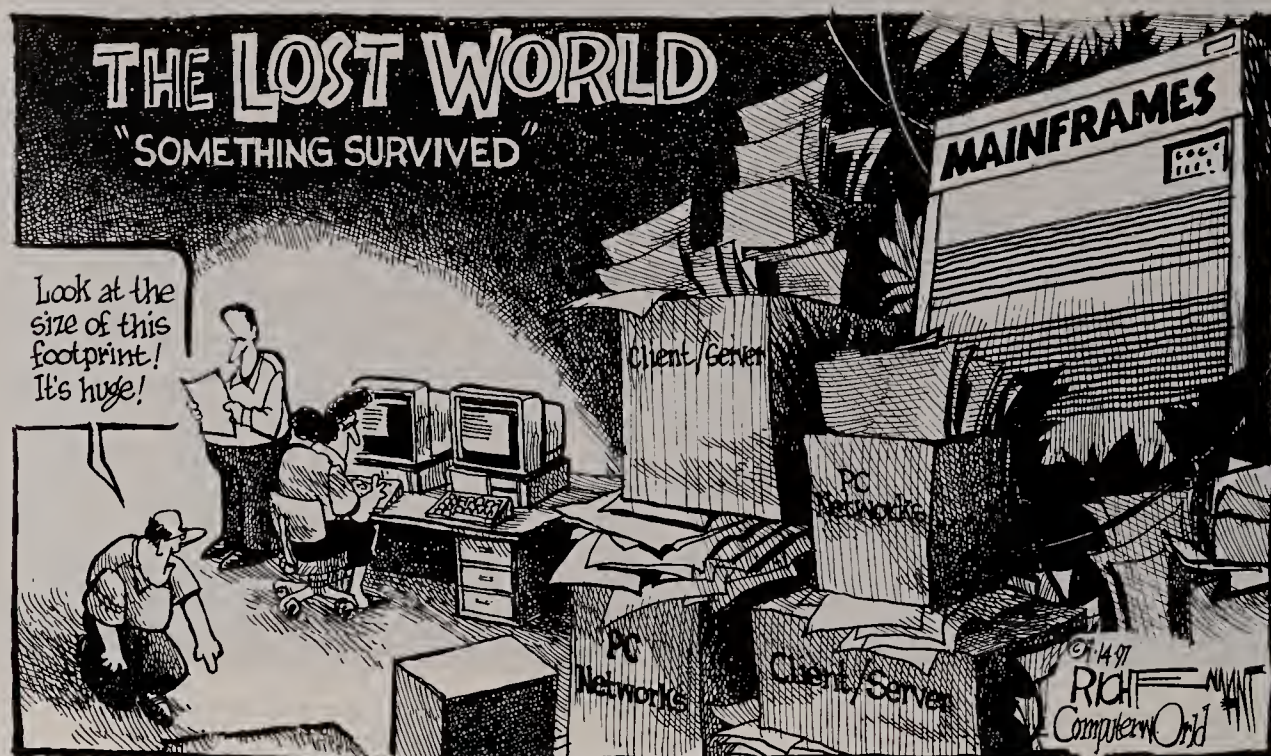
Of course, client/server, Java, the Internet and other newer technologies all have their place in the grand scheme of things. But mainframe applications are evolving into newer, more interactive and dynamic systems. That is very different from the thinking five years ago, which was to replace big iron completely with snappy client/server systems.

Consider these words from top MCI technologist John Gerdelman, president of NetworkMCI Services. “This whole place runs” on Cobol-based mainframe systems, he says. “I'm trying to convince all my people ... to evolve those established systems, because then we can get to market faster. Scalability is everything.”

Perhaps it's the mark of our throwaway society to think that anything new will simply annihilate the old. Yet take a look at Cobol programmers who were called dinosaurs and worse only a few years ago. They are having the last laugh now as corporations scramble to pay them big bucks to help resolve the year 2000 crisis. Who better to empathize with the next executive who stands up and says, “I'm from a Fortune 100 company, and I have a mainframe.”

Johanna Ambrosio

Johanna Ambrosio, Online editor
Internet: johanna_ambrosio@cw.com



L E T T E R S

Junk E-mail is annoying, but should it be illegal?



I AGREE COMPLETELY with news editor Patricia Keefe's tirade on spam ["Return to sender," CW, May 26]. I don't see why I have to wade through garbage to find out how to remove my name from someone's mailing list, which never works anyway. I forward it back to them and post that E-mail ad-

dress on a page that can be harvested by those MailBot collectors. Hopefully, spammers spamming one another will cause their systems to crash and burn.

Ralph Hightower
Chapin, S.C.

I FIND IT interesting that news editor Patricia Keefe urges readers to support an initiative to add spamming to the fax law, yet when it comes to passing laws to control hard-core pornography on the 'net, it's a free-speech issue. As she put it in her editorial: Cut the crap.

Douglas Pusateri
Phoenix

Development tools are no substitutes for good planning

W HOA! In your May 26 issue, a Fortune 500 manager is quoted as saying “Today's apps can be developed so rapidly that you can have one running before the project plan to do it the old way could be written” [“Technically challenged?”].

I'm glad you didn't publish which Fortune 500 company, because that kind of attitude should

cause its stock to drop precipitously. Anyone who thinks that today's development tools — which, generally speaking, do allow a program to be up and running more quickly — are substitutes for planning and good systems design does not belong in management in any size company.

Conrad Stegner
Richmond, Va.

Do Microsoft product reviews correlate with ad dollars?

I HAVE NOTICED a disturbing trend developing in Computerworld's product reviews. You consistently grade Microsoft as one of the best software publishers regardless of whether the reviews are of browsers, spreadsheet programs, E-mail software or word processors. I'm not saying Microsoft doesn't make quality products,

but I wonder how impartial the judges are. In the June 9 issue, I noticed Microsoft ran seven two-page ads and one three-page ad. Is it just me, or is your opinion of product quality in direct correlation with ad dollars spent?

Ron Hull
Whittier, Calif.
rbhull@themall.net

I wonder how impartial the judges are.

Successful online companies

I AGREE WITH Editor Paul Gilin's May 21 Upfront column [“Online reality”] that not all Internet enterprises will succeed. But I submit that certain types of businesses could exist only on the Internet — and those businesses seem to be thriving.

Two such companies that spring to mind are at www.bibliofind.com and www.onsale.com.

Bibliofind is a repository for used books. It allows hundreds, maybe thousands, of booksellers worldwide to pool their inventories into a single database. Customers can select the best deal among the many offerings that turn up.

Onsale is an online auction that lets customers bid on reconditioned and closed-out computer and electronics merchandise. The current winning bids for any particular auction lot are visible for all to see and bid against. Those on the list when the auction closes get the merchandise. I am spending more of my money online. For certain types of purchases, there is simply no alternative.

Don Staricka
Los Angeles
don@datadepot.com

Computerworld welcomes comments from its readers. Letters shouldn't exceed 200 words and should be addressed to Maryfran Johnson, Executive Editor, Computerworld, PO Box 9171, 500 Old Connecticut Path, Framingham, Mass. 01701. Fax number: (508) 875-8931; Internet: letters@cw.com. Please include an address and phone number for verification.

Congress may make staffing decisions easier

Steven Lipson and Harvey Shulman

The shortage of highly skilled computer professionals can create project delays, high labor costs and general frustration for IS managers.

Now Congress is considering legislation that could make staffing decisions easier by clarifying the definition of an "independent contractor" and making the workforce more flexible.

Are you an IS manager on a tight budget and short deadline, whose in-house employees are on other assignments or lack the expertise? Have you called a staffing firm and received resumes of consultants who have the right skill sets, are immediately available and will work within the billing rate? Did your excitement wane when you learned they will work only as independent contractors paid by the staffing firm and not as employees?



It's easier to staff hair salons with contractors than to staff high-tech projects.

Many IS managers must receive "special permission" from higher-ups in their legal, procurement and human resources departments before they can accept independent contractors. Lawyers and CPAs for the staffing firms and/or independent contractors also may get involved. In those situations, many IS managers, staffing firms or contractors just walk away. Everyone loses.

The root of the independent contractor problem is an unpredictable, 20-factor "common law" employment test that originated in medieval England but is used today by the IRS to distinguish in-

dependent contractors from employees.

Because the test isn't conclusive, even if contractors pay their taxes in full, the IRS could reclassify them as employees of the firm that pays them and collect the same taxes from that firm. Many staffing firms want to avoid a confrontation with the IRS and often reject independent contractors even if they are the best technical candidates.

The problem is particularly serious for high-tech professionals. Incredibly — acting under a now-disproven assumption that high-tech workers have higher tax non-compliance rates than workers in other industries — Congress added a section to the 1986 Tax Reform Act that makes it especially tough for computer professionals to work as independent contractors through staffing firms.

To prevent IRS reclassifications, other workers have a back-up position: If they can show evidence or a court opinion demonstrating it's the practice of their industry to hire independent contractors, they can work anywhere without having to pass a test. But Section 1706 removed high-tech workers from that safe haven. As a result, it's easier to staff construction projects or hair salons with indepen-

dent contractors than it is to staff high-tech projects.

The House has passed a tax/budget bill that offers a more flexible definition of "independent contractor" — known as the "Christensen definition" — that effectively nullifies Section 1706. But even though many senators and more than a dozen major high-tech associations have urged the repeal of Section 1706, the Senate's tax/budget bill has no independent contractor provisions.

A House/Senate conference committee this month will merge both bills, and the Christensen definition or a compromise may emerge. The compromise may come from Senate bill S.460, which repeals Section 1706 and requires the IRS to recognize the validity of incorporated independent contractors.

IS managers are trying to meet their staffing needs. Workers want tax credits for continued training. And more foreign professionals are being hired because our laws make such hiring easier than using homegrown independent contractors. Isn't it time to ask Congress to do something about it? □

Lipson is president of the National Association of Computer Consultant Businesses. Shulman is general counsel for the group.

Go for the big bang, but not too often

Michael Schrage

Let's say you're, oh, 45 pounds overweight. You know you're not really healthy; you're sick of dragging yourself around and tired of trying to squeeze into things that no longer fit. You decide it's time for a major change. Money isn't the top issue. So what choice would make the most sense for you?

Would you a) opt for the significant but gradual lifestyle adjustment of eating less and exercising more? Or b) go the liposuction route of an ultrasound-tipped canula vacuuming the fat out of you? And don't forget you have to wear those tight rubber pants for weeks afterward.

The analogy isn't perfect, but the psychology surrounding it is. Your choice reveals a vital something about your management style and priorities. Diet or surgery? Evolution or revolution?

Most IS organizations find themselves caught in comparable debates about whether they should take a "big bang" approach to a systems switchover or whether the gradual, incremental approach is best. Yes, the choice is frequently out of the hands of IS. But this is

one of those debates in which both sides can make valid, cost-effective and culturally pertinent cases for their positions.

But after chatting with a few systems integrators and CIOs, I'm firmly convinced that the big bang is the way most IS organizations should go. The reasons? Politics and pragmatism.

These are times when managing events is seen as every bit as important as managing processes. The visibility — and associated risks — of a hard deadline and the reality that the organization will be a different place come a certain date focuses the corporate culture in a way that subtle changes over time simply can't. It's Machiavelli redux: Make no small plans — big bangs bespeak boldness.

They command and demand attention. And, let's face it, attention is one of the most valuable commodities in an organization today.

To be sure, you want the right kind of attention. To perform a radical systems switchover in such a way that people can hardly tell what happened may be virtuoso technology management, but it also can be an act of self-destructive organizational stupidity. A CIO who doesn't do a decent job commanding his enterprise's "attention economy" spends the bulk of his time on outsourcing.

Not coincidentally, does anybody anywhere in America know of a successful outsourcer/systems integrator who doesn't believe in the virtues of big bangs? Do you think SAP, Andersen Consulting and EDS rose to global prominence by preaching and



Make no small plans; big bangs bespeak boldness.

practicing the gradualist gospel for their clients? These folks talk transformation, not incrementalism. Experience has taught them that the shock of the new is a better business model than a warm bath of familiarity.

I empathize with the pragmatic motives and the behavioral realities of enterprise computing today, but I have to wonder whether big bangs are going to lead to IS organizations that mismanage their attention portfolios in ways that confuse events with process. There's a thin line between trends and trendiness, fads and discontinuities, alerting people and nagging them. The universe had one big bang; I personally know companies that have had three in four years.

Today, big bangs are about creating urgency and credibility for change. But use them strategically. By the end of this decade, we'll probably be complaining that they're another reason for IS cynicism. We do an excellent job of pushing useful management ideas beyond diminishing returns, don't we? □

Schrage is a research associate at the MIT Media Lab and author of No More Teams! His Internet address is mschrage@media.mit.edu.

WITH DISTRIBUTED APPLICATIONS, A PROBLEM



IS ONLY A PROBLEM IF YOU DON'T

SEE IT COMING.

Nobody likes to be blindsided by a problem. That's why we created Candle Command Center®, a solution which gives you the power to detect and control problems and manage your SAP R/3, Lotus Notes, and internally developed applications — all from a single management point.

Whether your applications run on ORACLE, Sybase, Informix, Microsoft SQL Server, DB2, IMS, or CICS — whether they run on Windows NT, UNIX, OS/400, or MVS and their associated networks — Candle Command Center has the scope, scale, and power to keep you in control.

Candle brings you the power to address the mission impossible problem of end-user application response time and the power to manage new technologies such as MQSeries.

To see how we can help you stay in control, call us toll-free at 1-888-322-9988 or visit our Web site at www.candle.com.

And begin thinking ahead today.

!Candle

C O M M E N T A R Y

Direct model claims victory

DAVID MOSCHELLA

IT'S OFFICIAL. If you buy your PCs from a direct vendor such as Dell, Gateway or Micron, you will not only

save money, but you will also probably be happier. That's the unavoidable conclusion of *Computerworld's* recent enterprise

PC customer satisfaction survey.

As detailed in this issue's Buyer's Guide (page 66), *Computerworld* has surveyed more than 1,600 PC buyers at medium-size and large U.S. organizations, generating statistically valid data for the top 10 desktop and notebook vendors.



The research could hardly be more timely. Sales from direct vendors are booming, forcing Compaq to publicly debate the future of its traditional channel approach. Going into the survey, we were confident that customers would recognize

the price advantages of the direct model.

But how would their enterprise services compare?

The answer is clear. Selling direct isn't just about eliminating reseller commissions. It's about knowing your customers, getting them the latest technology, configuring systems as needed and testing for compatibility and rapid service response. In those and other areas, Dell consistently scored big, almost always among the top three vendors across the 33 desktop and notebook categories measured. Gateway and Micron were just a small step behind. The former was strong in desktops, and the latter very strong in notebooks.

The only channel-based player to match the scores of the three direct vendors was Hewlett-Packard, which continued its remarkable streak of being first or second in every category it competes in across our network, enterprise systems and now PC satisfaction surveys. HP's overall record is so strong, it makes you wonder if somehow it has just trained its customers to always report how happy they are.

What about the traditional PC giants? Compaq's results were uninspiring, especially in notebooks; the No. 1 PC vendor was rated average for most product and service categories. Like Compaq, notebook giant Toshiba will find little comfort in its generally mediocre scores. For IBM, the results were more damaging. Its desktop ratings were consistently below average, especially in terms of hardware quality and cost of ownership. Its notebooks fared better in quality but faced similar value concerns.

From a broader perspective, the success of the direct approach should be seen as a success for our industry. Information technology makes direct vendors' mass customization and one-to-one marketing possible. It enables them to keep up with ever-changing and highly complex technologies. It's a big step toward real electronic commerce and provides a compelling proof-of-concept story. Other industry sectors surely will notice.

For vendors still using a traditional reseller strategy, this research is perhaps a final warning. The PC industry has found a superior sales and service approach that will only gain momentum as long as PC technology continues to change rapidly. Technology-enabled mass customization can provide the highest quality and the lowest price. Deep down, channel-based vendors know that tinkering with processes just won't cut it. It would be a dangerous time to remain in denial. □

Moschella is senior vice president of research at Computerworld, Inc. His Internet address is david_moschella@cw.com.

THE @COMPUTERWORLD MINUTE. FOR THOSE WHOSE DAYS ARE COMPRISED ENTIRELY OF NEW YORK SECONDS.



Hey, we know your hectic schedule doesn't always allow you as much quality time as you'd like with your trusty issue of *Computerworld*. And that you can't always peruse every pixelated word of our website, spiffy though it may be.

That's why there's the @Computerworld Minute—a succinct online romp through the hottest IT headlines. You'll hear the day's news and insights from *Computerworld's* own editors.

So now you can get your daily fix of

Computerworld candor and feistiness no matter how many minions are breathing down your neck.

To catch the @Computerworld Minute, go to www.computerworld.com on the web.

COMPUTERWORLD

Corporate Strategies

Case Studies • Trends • Outsourcing

Briefs

Entex wins contract

AlliedSignal, Inc. in Morris Township, N.J., has awarded a multimillion-dollar, three-year PC support outsourcing contract to Entex Information Services in Rye Brook, N.Y., to manage its 36,000 PCs across North America. The contract may eventually be extended to cover AlliedSignal's global desktop systems.

Mellon/MCI venture

Mellon Global Cash Management, a unit of Pittsburgh-based Mellon Bank Corp., plans to form a joint venture with MCI Systemhouse to provide customers with accounts payable and accounts receivable business process outsourcing services. Using Oracle Corp.'s Application software, the venture will process transactions, post payables and receivables and update customers' general ledger systems.

Health care broadcast

Perot Systems Corp. in Dallas has teamed up with IntelliHealth and PointCast, Inc. to launch an Internet broadcast service for health care professionals. IntelliHealth is a joint venture formed by Aetna U.S. Healthcare and Johns Hopkins University and Health System.

Independent computer consultant facts

- Typically male, 36 years old, owns his own home and is married with children
- Average earnings of \$63 per hour or \$120,000 per year
- 25% exceed the average, earning up to \$180,000 per year
- Currently there are 1.25 million independent computer consultants, increasing 17% annually

Base: 270 independent IS consultants

Source: The Information Elite by Dominique S. Black and Richard C. Andreini, Redwood Shores, Calif.

Outsourcer scores retail win

► IT system assists ball teams with sales

By Thomas Hoffman
BALTIMORE

BASEBALL PURISTS detest changes of any kind to our national pastime, such as the introduction of interleague play this season.

But when it comes to baseball's use of information technology, purists haven't had much to worry about — most of



Aramark's Cindy Troll:

Demand for hot dogs, hats and T-shirts at Baltimore's Camden Yards "is like Christmas eight days in a row"

the hot dogs and hats sold at America's ballparks are still tracked with pencil and paper.

But small-city franchises such as the Pittsburgh Pirates "have to optimize concessions to squeeze every penny they can to

survive," said Bruce Rogow, a former Gartner Group, Inc. analyst who is now an independent consultant in Marblehead, Mass.

Most major league baseball
Outsourcer, page 38

Web tool helps fight world poverty



A U.N. program's Web site helps fight rural poverty by sharing information from recipients such as these soil and water conservation program participants in Burkina Faso, West Africa

► U.N. Web project shares experiences

By Sharon Machlis

IN THE FIGHT against rural poverty, a program that helped farmers in the hills of Nepal might have useful lessons in the highlands of South America. But how would anyone find out?

"That's what the [Internet] is for," said Pierre Spitz, director

of the United Nations International Fund for Agricultural Development's (IFAD) office of evaluation and studies in Rome.

IFAD set out on a two-year project to develop a computerized knowledge base culled from 461 projects undertaken since 1978. Initially, the data resided on an internal network. But since last month, a revised version has been available on the World Wide Web (www.ifadeval.org).

"We want to become a knowledge center on fighting rural poverty," Spitz said. "People can learn from the experience of others. [Programs] need to be cross-fertilized."

Spitz said the internal network has already helped similar projects in Ghana, India and Nicaragua to learn from each other, as experiences help formulate suggestions for what to do — and what not to do —

Web tool, page 38

CONSULTANTS

Firm saves independents from red tape

By Julia King

RED TAPE, ever-changing accounting rules and a better than average chance of a tax audit are the triple career whammies that most freelance IS consultants face.

But not Janet Saulter-Hemmer, a 42-year-old information systems trainer in Parsippany, N.J.

On a daily basis, Saulter-Hemmer functions as an independent consultant, choosing her work assignments and setting her rates. But to the Internal Revenue Service, she looks just like an employee — one who receives a regular salary and an annual W-2 wages statement under a unique working arrangement with McLean, Va.-based Netplex Group, Inc.

"I have total control over my marketing and my clients," Saulter-Hemmer said.

Independents, page 39

Pacific Bell lures users to Internet for self-help

By Kim Girard

PACIFIC BELL INTERNET'S Judith Meskill knew that paying internal staffers to answer questions that customers could easily answer themselves meant money lost for the Internet service provider.

So Meskill searched for a World Wide Web-based service that would enable business and residential customers to quickly find their passwords or fix their own modem problems.

Her search fell in line with a growing trend toward online self-help services that can reduce the use of costly call centers.

"The major challenge in this industry is to craft call-avoidance strategies," said Meskill.
Self-help service, page 39

Outsourcer scores win

CONTINUED FROM PAGE 37

teams and their concessionaires "have nowhere near the same technological sophistication of even the most primitive retailers," said Rogow, who is familiar with operations at several ball clubs.

The Babe Ruth of the managed services market, Aramark Corp., is trying to change all that. The Philadelphia-based vendor, which runs retail operations at nine major league stadiums, 70 professional sports facilities and 18 convention centers, has been running an automated point-of-sale/inventory system at Oriole Park at Camden Yards for the past three years.

Retail Automated Merchandising Systems (RAMS) from Richter Systems, Inc. in New York has helped Aramark boost sales by making sure the right inventory is on hand. That speeds the flow of merchandise and slashes sales costs by minimizing warehouse stockpiles,

said Cindy Troll, a marketing analyst at Aramark's leisure services division.

The RAMS system, which runs on a SCO/Unix server, is "able to highlight any shortages we might be facing on a daily basis," said Troll, a five-year Aramark veteran who came to the services giant as a free agent in 1992 after a stint at New York-based Macy's.

HIGH SALES

For an eight-game Orioles homestand, where the team consistently sells out the ballpark, sales in the main gift shop "is like Christmas eight days in a row," Troll said.

Retail traffic gets even zanier when the Orioles play a nearby interleague opponent such as the Philadelphia Phillies, as they did on a recent homestand earlier this month. "It gets crazy here — this is a slow night for us," said Glenn Szymanski, store manager at Camden Yards'

main gift shop, where more than 100 people jammed the store before a recent Orioles/Phillies game.

RAMS "helps identify when we're having a run on Cal Ripken Jr. T-shirts and keeps the lines moving quickly," Szymanski said. At the time, quick-moving lines in the store were never more than three people deep.

Troll placed Aramark's software investment in the five-figure range, not counting the more than 50 point-of-sale terminals Aramark had to install at Camden Yards. She placed the payback at less than three years.

And Aramark last year won a multiyear contract to handle merchandise, food and beverage concessions at Atlanta's new Turner Field. Although hundreds of factors weighed into the Atlanta Braves' decision behind selecting a services vendor, Troll said she is convinced that its use of IT played a key role. Outsourcing customers such as the Braves and Orioles "want to see something that's 21st century and something that lends them competitive advantage," Troll said. □

Web tool helps fight world rural poverty

CONTINUED FROM PAGE 37

when spending money on agricultural projects.

The Evaluation Knowledge System contains "lessons learned" from the \$5 billion spent by the agency during the past 18 years.

"This is one of the most complex projects I have ever done," said Paris-based computer consultant Diaa Zenie.

The internal version uses viewing software from Microsoft Corp. and proprietary applications developed in C++ and Delphi. Data is then translated into Hypertext Markup Language for the Web version.

The information is altered somewhat for the Internet so that individuals involved in the programs can't be identified. Areas that don't have Internet access can receive a PC version on diskette.

The project offered unique challenges because of its worldwide nature, with project members located in Argentina, India, Morocco, the U.S. and Europe, Zenie said.

For example, because a key system goal was ease of use, design wasn't the usual process of drawing up specifications and developing a system, Zenie said. Instead, he would come up with an initial simulation, send it to many testers for comment, and then make modifications — again and again.

"To be honest with you, sometimes I had to knock my head against the wall during the development, but I am very happy with the results," he said. "When you finish, you have something that is multicultural, too, [that can be] used by rural poor themselves." □

The one truly open email and groupware solution

Introducing Netscape Communicator and SuiteSpot. The browser was only the beginning.

At some point you'll launch Netscape®, you'll exchange email with people inside and outside of your company and, all of a sudden, it will hit you. The enterprise email and groupware solution that you've been looking for is closer than you think.

Netscape Communicator and SuiteSpot are the world's only fully native open solutions for email and groupware. And, because they're built from the ground up on the Internet messaging standards Netscape helped create, you can now extend your intranet



Self-help service

CONTINUED FROM PAGE 37

director of product and systems development at Pacific Bell Internet in San Francisco.

"Customers are becoming less sophisticated, and there are not enough people to answer phone questions. People who can't program their VCR are now using cutting-edge computer technology," she said.

Several months ago, Meskill's crew installed Eservice, Web-based software from Silknet Software, Inc. in Manchester, N.H. Pacific Bell Internet's self-help service went live July 1.

The system connects a knowledge base with answers to 40 of the most common software installation problems to Pacific Bell Internet's Web page (*public.pacbell.net*).

If users can't find answers by searching the Web page, they can submit a trouble ticket or make a telephone call. Answers can be returned via electronic mail or a return phone call. A knowledge base from Edison,

N.J.-based Advantage KBS, Inc. narrows the search by asking the user to answer questions. Using the knowledge base, information systems employees can handle a typical 15-minute call in less than three minutes.

So far, Meskill said, 40 of Pa-

cific Bell Internet's 100,000 customers have found the service. She said many more will take advantage of the tool because it is available all the time and can eliminate phone waits.

"If you can reduce [phone] calls from 15% to 20%, you're in good shape," Meskill said.

Hugh Bishop, an analyst at Aberdeen Group, Inc. in Boston, said the Silknet system differs from offerings from rivals

Vantive Corp. in Santa Clara, Calif., and Scopus Technology, Inc. in Emeryville, Calif., because it is built on ActiveX, a technology for posting Windows programs to the Internet. That means Silknet was designed for the Web instead being of a Web interface built on top of an old system made to track and log trouble tickets. Because Eservice is Web-based, proprietary software isn't needed.

Of the telecommunications carriers, Pacific Bell Internet is likely ahead in the online self-help game simply because few companies are tackling such projects, said Robert Marani, a senior telecommunications analyst at The Yankee Group in Boston. Coupled with an automated voice-response system, a Web-based service could cut help-desk calls by 70% after six months, he said. □

Independents

CONTINUED FROM PAGE 37

In exchange for 4% of her earnings, a Netplex service representative dedicated to her account processes Saulter-Hemmer's invoices, tracks and pays her expenses and goes after deadbeat clients for payment.

"I've had clients who have gone over 90 days and not paid, and [my Netplex representative] has been like a pit bull," recouping payments as high as \$10,000, Saulter-Hemmer said.

Started 10 years ago as a coop-

erative for independent technical workers, Netplex has grown to 280 consultants who work as employees under its Independent Employee Services program. Consultants' fees are funneled into individual profit center accounts against which the workers' salaries and expenses are drawn.

Netplex employees pay for their own benefits but together can get lower rates than they would as individual contractors.

Benefits include lower-priced group health, life and liability insurance. The company also offers help with financial planning and changing tax laws.

"As an independent, you have periods of feast and famine," said George Menendez, a consultant in Morganville, N.J. "So I look at my projected income, then have Netplex pay me at a certain rate so that it evens out the cash flow. It gave me the best of both worlds."

Benefits for Netplex go beyond the 4% fees it collects for handling consultants' back-office tasks. Eventually, the company plans to get more involved

in the staffing business, collecting additional fees for workers it places on projects.

"Our goal is to cultivate a farm team of talent that we could channel to our own customers," said Gene Zaino, Netplex's CEO and a former tax accountant. "Our strategy is that we'll be able to find [consultants] other projects from time to time, and we'll earn a margin on that."

Earlier this month, Netplex launched a service aimed at employers, many of which now shy away from independents for fear that the IRS will reclassify them as employees. □

has been staring you in the face for over two years.

beyond the traditional boundaries that restrict existing proprietary solutions.

To come face to face with the future of communication and collaboration visit

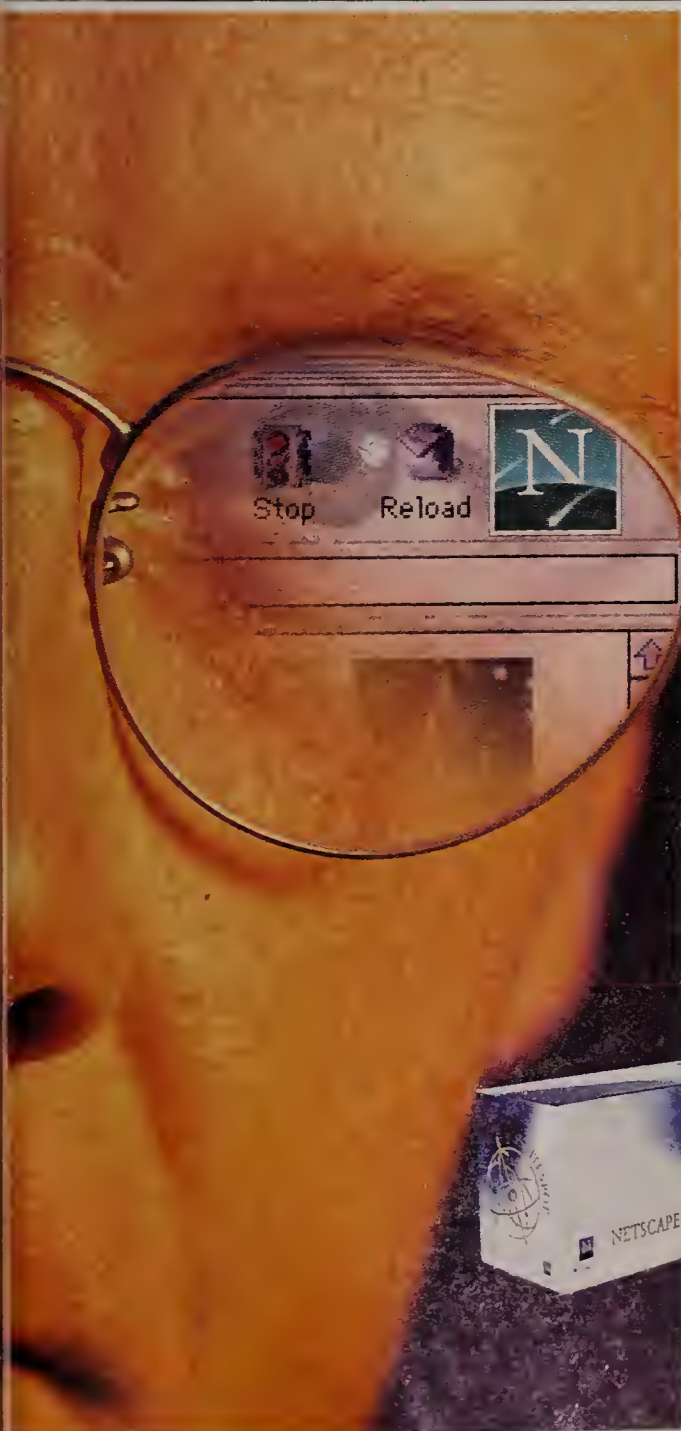
<http://home.netscape.com/ad/cworld> and try out Netscape's latest email and groupware solutions. Or call 888-777-0159 for a Netscape SuiteSpot test drive CD.



NETSCAPE

The Internet Company

©1997 Netscape Communications Corporation, Inc. Netscape and the Netscape logo are registered trademarks of Netscape Communications Corp. in the U.S. and other countries. Netscape Communicator and SuiteSpot are also trademarks of Netscape which may be registered.



IT'S NOT LONELY AT THE TOP. IF ANYTHING, IT'S TOO DAMN CROWDED.



©1997 Computerworld, Inc.

And you thought B-school was competitive.

A lot of people are climbing that IT ladder with you. Bold, talented, aggressive type-As, most of whom are trying to grab three rungs at a time.

How can you hope to keep up, or, dare we say it, get ahead?

Allow us to submit for your perusal (or fanatical scrutiny as the case may be), the Computerworld Leadership Series. A special monthly insert geared to senior-level IT managers, and chock-full of case

studies, advice, polls and crucial insights into the latest management

trends you need to know about to run your business more effectively. (Are you spending enough on your electronic commerce infrastructure? One estimate says the cost for global companies is \$18 per desktop per month.)

The Leadership Series is free with your subscription, which you may order by calling 1-800-343-6474, ext. 8129, or go to www.computerworld.com on the web. You just might find that the IT ladder has a passing lane.



Don't miss "An IT Manifesto for Line Managers" by Jerry Kanter.

Attention, line managers: you and your peers are getting involved with information technology planning, budgeting and projects as never before. What must you know and do to be an effective player in your company's IT scene? Jerry Kanter, director of the Center for Information Management Studies at Babson College, in Wellesley, Mass., offers his answer: a ten point plan for line managers who want to be successful IT leaders.

Coming in the July 21st issue of Computerworld.

COMPUTERWORLD
The Newsweekly for Information Technology Leaders

WIN THE WAR

☒ Yes, I want to receive my own copy of **COMPUTERWORLD** each week. I accept your offer of \$39.95* per year - a savings of over 73% off the single copy price.

First Name _____ MI _____ Last Name _____
Title _____ Company _____ E-mail address _____
Address _____ City _____ State _____ Zip _____
Address Shown: ☐ Home ☐ Business ☐ New ☐ Renew Single copy price: \$3.00/issue *U.S. Only. Canada \$95, Mexico, Central/South America \$150, Europe \$295, all other countries \$295.

Please complete the questions below.

1. BUSINESS/INDUSTRY (Circle one)

- 10. Manufacturer (other than computer)
- 20. Finance/Insurance/Real Estate
- 30. Medical/Law/Education
- 40. Wholesale/Retail/Trade
- 50. Business Service (except DP)
- 60. Government - State/Federal/Local
- 65. Communications Systems/Public Utilities/Transportation
- 70. Mining/Construction/Petroleum/Refining/Agriculture
- 80. Manufacturer of Computers, Computer-Related Systems or Peripherals
- 85. Systems Integrators, VARs, Computer Service Bureaus, Software Planning & Consulting Services

- 90. Computer/Peripheral Dealer/Dist./Retailer
- 95. Other _____

(Please Specify)

2. TITLE/FUNCTION (Circle one)
IS/MIS/DP MANAGEMENT

- 19. Chief Information Officer/Vice President/Asst. VP IS/MIS/DP Management
- 21. Dir./Mgr. MIS Services, Information Center
- 22. Dir./Mgr. Network Sys., Data/Tele. Comm., LAN Mgr./PC Mgr., Tech. Planning, Administrative Services
- 23. Dir./Mgr. Sys. Development, System Architecture
- 31. Programming Management, Software Developers

- 41. Engineering, Scientific, R&D, Tech. Management

- 60. Sys. Integrators/VARs/Consulting Management

CORPORATE MANAGEMENT

- 11. President, Owner/Partner, General Mgr.
- 12. Vice President, Asst. Vice President
- 13. Treasurer, Controller, Financial Officer

DEPARTMENTAL MANAGEMENT

- 51. Sales & Mktg. Management
- 70. Medical, Legal, Accounting Mgt.

OTHER PROFESSIONAL MANAGEMENT

- 80. Information Centers/Libraries, Educators, Journalists, Students
- 90. Other Titled Personnel

- 3.** Do you use, evaluate, specify, recommend, purchase: (Circle all that apply.)

Operating Systems

- (a) Solaris (e) Mac OS
- (b) Netware (f) Windows NT
- (c) OS/2 (g) Windows
- (d) Unix (h) NeXTstep

App. Development Products ☐ Yes ☐ No

Networking Products ☐ Yes ☐ No

Intranet Products ☐ Yes ☐ No

- 4.** Which of the following products do you buy, specify, recommend or approve the purchase of? (Check all that apply.)

- (a) ☐ Internet software
- (b) ☐ Internet browsers
- (c) ☐ Web authoring/development tools

COMPUTERWORLD

B4G7 W

CAPTURE THE FUTURE

☒ Yes, I want to receive my own copy of **COMPUTERWORLD** each week. I accept your offer of \$39.95* per year - a savings of over 73% off the single copy price.

First Name _____ MI _____ Last Name _____
Title _____ Company _____ E-mail address _____
Address _____ City _____ State _____ Zip _____
Address Shown: ☐ Home ☐ Business ☐ New ☐ Renew Single copy price: \$3.00/issue *U.S. Only. Canada \$95, Mexico, Central/South America \$150, Europe \$295, all other countries \$295.

Please complete the questions below.

1. BUSINESS/INDUSTRY (Circle one)

- 10. Manufacturer (other than computer)
- 20. Finance/Insurance/Real Estate
- 30. Medical/Law/Education
- 40. Wholesale/Retail/Trade
- 50. Business Service (except DP)
- 60. Government - State/Federal/Local
- 65. Communications Systems/Public Utilities/Transportation
- 70. Mining/Construction/Petroleum/Refining/Agriculture
- 80. Manufacturer of Computers, Computer-Related Systems or Peripherals
- 85. Systems Integrators, VARs, Computer Service Bureaus, Software Planning & Consulting Services

- 90. Computer/Peripheral Dealer/Dist./Retailer
- 95. Other _____

(Please Specify)

2. TITLE/FUNCTION (Circle one)
IS/MIS/DP MANAGEMENT

- 19. Chief Information Officer/Vice President/Asst. VP IS/MIS/DP Management
- 21. Dir./Mgr. MIS Services, Information Center
- 22. Dir./Mgr. Network Sys., Data/Tele. Comm., LAN Mgr./PC Mgr., Tech. Planning, Administrative Services
- 23. Dir./Mgr. Sys. Development, System Architecture
- 31. Programming Management, Software Developers

- 41. Engineering, Scientific, R&D, Tech. Management

- 60. Sys. Integrators/VARs/Consulting Management

CORPORATE MANAGEMENT

- 11. President, Owner/Partner, General Mgr.
- 12. Vice President, Asst. Vice President
- 13. Treasurer, Controller, Financial Officer

DEPARTMENTAL MANAGEMENT

- 51. Sales & Mktg. Management
- 70. Medical, Legal, Accounting Mgt.

OTHER PROFESSIONAL MANAGEMENT

- 80. Information Centers/Libraries, Educators, Journalists, Students
- 90. Other Titled Personnel

- 3.** Do you use, evaluate, specify, recommend, purchase: (Circle all that apply.)

Operating Systems

- (a) Solaris (e) Mac OS
- (b) Netware (f) Windows NT
- (c) OS/2 (g) Windows
- (d) Unix (h) NeXTstep

App. Development Products ☐ Yes ☐ No

Networking Products ☐ Yes ☐ No

Intranet Products ☐ Yes ☐ No

- 4.** Which of the following products do you buy, specify, recommend or approve the purchase of? (Check all that apply.)

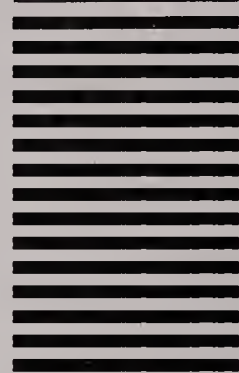
- (a) ☐ Internet software
- (b) ☐ Internet browsers
- (c) ☐ Web authoring/development tools

COMPUTERWORLD

B4G7 W



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES



BUSINESS REPLY MAIL

FIRST-CLASS MAIL PERMIT NO. 55B MARION OH

POSTAGE WILL BE PAID BY ADDRESSEE

COMPUTERWORLD

P O BOX 2044
MARION OHIO 43306-4144



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES



BUSINESS REPLY MAIL

FIRST-CLASS MAIL PERMIT NO. 55B MARION OH

POSTAGE WILL BE PAID BY ADDRESSEE

COMPUTERWORLD

P O BOX 2044
MARION OHIO 43306-4144



The Internet

Electronic Commerce • The World Wide Web • Intranets

Briefs

Web server security

Security Dynamics Technologies, Inc. in Bedford, Mass., has released an authentication tool for Netscape Communications Corp. servers. ACE/Agent uses randomly generated password codes to help secure network access. With the product, users can sign on only with a personal identification number and a random code generated from a security token.

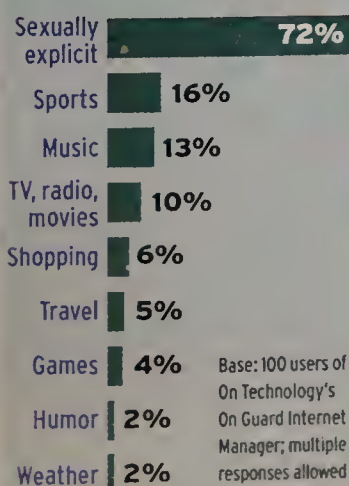
Web groupware

SoftArc, Inc. in Markham, Ontario, this week will ship the FirstClass Intranet Server, software that adds World Wide Web hooks to the company's FirstClass messaging and groupware system. With the software, electronic mail, discussion databases, remote access, forms processing, database access and publishing services are available over IP networks. It costs \$999.

Web presentations

Contigo Software in San Diego, plans today to announce a new release of its Web Presenter software for converting Microsoft Corp. PowerPoint and Corel Corp. Presenter presentations to a format that can be viewed by any Java-enabled Web browser. Presenter lets a user giving a presentation control other users' browsers and guide them through presentations. Pricing for the software starts at \$195. Web Presenter will be available next month.

What type of sites are your users visiting?



Source: On Technology Corp., Cambridge, Mass.

Surfing surrogate saves time

► *PoliTech clients include candidates, lobbyists*

By Craig Stedman

THE INTERNET puts gobs of information at everyone's fingertips. But not everybody wants to while away the day surfing the Web for data.

Take Keith Schuette, for example. Schuette, a political lobbyist in Washington, used to set aside an afternoon each week to browse the World Wide Web for news articles, trade reports and other postings related to his foreign-government clients.

"Not that it wasn't fun and fascinating, but I get paid to do other things," said Schuette, director of international operations at lobbyist William D. Harris & Associates. "There's just no way that I've got time to go around and hit all the sites that report on [my clients]."

And the surfing process was chewing up more and more of Schuette's workday because of the never-ending upward spiral in the number of Web sites, even for Bolivia and the other relatively obscure countries he represents.



Schuette could have hired an in-house researcher to do the clicking for him. But instead, he outsourced his Web browsing to PoliTech Research, Inc., a Reston, Va., company that in January began offering to surf the Internet for political candidates, lobbyists and multinational corporations.

Now Schuette gives data col-

lection guidelines to PoliTech, which finds relevant material on the Internet and analyzes it for accuracy and impact. The information is collated into paper reports and stored in a database that Schuette can access via an extranet. The service costs about what a full-time researcher would, "but it's more sophis-

Web surfing, page 42

COMMENTARY

Business on 'net? Phooey

MITCH WAGNER

TWO YEARS AGO, the big news for Internet doom-sayers was that the Internet was going to melt down in 1996. This year's smaller news was that the same doom-sayers apologized, saying it looked as if they were overly pessimistic and that the Internet was just fine after all.

Phooey on that, say I. The Internet did melt down. It's just that we were all so busy downloading the latest bug fixes and patches for our Internet software, we didn't notice.

The Internet's notorious unreliability is its biggest obstacle to widespread acceptance as a mainstream commerce channel — more so than security, ease-

of-use and other barriers.

We hold a higher standard of accountability to communications channels such as telephones, overnight delivery companies such as Federal Express, and faxes. We expect them to work almost all the time, and they do. The Internet won't become a real tool for business until it can meet the same high standard.

As long as you can't be sure of getting an Internet connection, the Internet will always be an alternative communications channel — something you use in addition to

something reliable. The applications that run well on the Internet today are things such as package-tracking applications and human-resource information lookups. In those applications, if the E-mail bounces or the Web server is down, it's no big deal. You can just try again later. And if worse comes to worst, you can pick up a phone or send a fax.

I had plenty of time to ponder this subject recently when my Internet connection went down. Again.



Wagner, page 43

SOFTWARE

Pentagon to get updates online

By Mitch Wagner

IN ONE OF the largest electronic software distribution deals ever, two Department of Defense agencies have signed a \$50 million deal with Software.net to receive updates to Microsoft Corp. applications over the Internet.

The Defense Logistics Agency and the Department of Defense Procurement Agency expect to save \$30 million compared with the cost of buying the same software through conventional channels. Software.net, a service owned by CyberSource Corp. in San Jose, Calif., will deliver the software to 70,000 federal employees annually.

The Pentagon agencies selected electronic software delivery over conventional channels for reasons of convenience as well as finances, said Arthur Bailey, a spokesman for the Defense Logistics Agency, which administered the contract.

"The advantage to doing it electronically is the amount of time you save," Bailey said. "The installs can be done in the nighttime, across the networks, and when employees come in in the morning, everyone is updated with the same version of the software."

The electronic distribution also will make it possible to update software with the click of a button rather than having to send employees around the world to update the software by hand. That will save employees time and will make it easier to ensure that employees are using the same software versions, which will minimize compatibility problems.

"When employees come in in the morning, everyone is updated with the same version of the software."
— Arthur Bailey, Defense Logistics Agency

Pentagon, page 42

Pentagon updates online

CONTINUED FROM PAGE 41

But electronic software distribution has its potential pitfalls, which have prevented many companies from adopting the technology, said analyst Amy Wohl, president of Wohl Associates, a consultancy in Narberth, Pa. One concern is that some of the software might arrive corrupted.

"If a line blips while I'm capturing the wrong bit, and I don't find it for a few weeks — after I've already distributed it to 70,000 people — that can wreak a lot of havoc," Wohl said. "And I can avoid that by waiting a day for the CD-ROM to come [via] FedEx."

Electronic software distribution is a small but growing channel for getting software into user hands. Software com-

panies expect about 30% of their revenue to come from electronic channels in two to five years, according to a recent survey by "Softletter," an industry newsletter in Watertown, Mass.

Traditional distributors such as Tech Data Corp. in Clearwater, Fla.; Merisel, Inc. in El Segundo, Calif.; and Intelligent Electronics, Inc. in Exton, Pa., are outsourcing services to companies such as CyberSource and LittleNet LLC in Lowell, Mass., to provide back-end distribution services.

Software.net will post the software to a secure, password-protected World Wide Web server that can be accessed by desig-

nated Defense Department employees on the same day the software ships from Microsoft. Included in the contract are Windows NT Server, Exchange, Internet Explorer, Internet Information Server, Front Page and Microsoft Office 97.

The software is encrypted for travel over the Internet using Ziplock from Portland Software, Inc., which uses encryption algorithms from RSA Data Security, Inc. □

Web surfing gets outsourced

CONTINUED FROM PAGE 41

ticated," Schuette said.

PoliTech uses a variety of Web search tools — including Fairfax, Va.-based IsoQuest, Inc.'s NetOwl text analysis and data extraction software — to look for information on political issues and potential political risks in foreign countries. The company has about 20 clients thus far, said Bob Liscouski, its president.

Black America's Political Action Committee (BAMPAC), which supports conservative blacks running for office, recently started relying on PoliTech to surf the Web for prospective corporate donors and other sources of funds.

"We have access to the Web, so we're not in the Dark Ages here," said Alvin Williams, BAMPAC's executive director in Washington. "It's more a question of time for me. There's a wealth of information out there, but getting it and culling it is the ball game. That's very laborious."

For resource-strapped organizations, a service such as PoliTech's can open up the data riches of the Web, said Carl Frappalo, an intranet and document management analyst at Delphi Consulting Group, Inc. in Boston. But NetOwl and other emerging search tools should make Web surfing less overwhelming for individuals, he said.

Even so, the Internet doesn't seem to be putting people such as Mercay Pinder out of business. Pinder, a research analyst at Advanced Manufacturing Research, Inc. in Boston, said the Web isn't choking off the inquiries she gets from the consulting firm's user and vendor clients.

The answers Pinder finds are often available to all comers on the Web. "But when you have people at a senior level, a lot of them don't even look at the Internet because it takes so much time," she said. □

SIEMENS

Before you buy another phone, check the



©1997 Siemens Business Communication Systems, Inc.

Wagner: Business on 'net

CONTINUED FROM PAGE 41

I eventually discovered that my main Internet service provider, UUnet Technologies, had suffered a major outage the day I had my problems. My bright idea of having a backup Internet service provider would've worked fine — except my back-

up provider was Netcom On-Line Communication Services, and Netcom had a bad hair day at the same time as UUnet.

"It's like booking passage on the *Titanic* with backup reservations on the *Hindenburg*," my editor said.

By now, Internet veterans who've read this far are grinning in rueful agreement. Everybody who's been on the Internet for a while has stories like mine. Consider some recent stories in the headlines:

■ ETrade Group, a Palo Alto, Calif., company that runs an online stock-trading service, suffered an Internet server crash near the close of stock trading June 24. The backup failed, too, and ETrade had to switch to phone service to handle cus-

tomers queries.

■ Even Microsoft has problems keeping its Web site available. Its site has been subject to slowdowns and outages recently, problems that Microsoft officials blame partly on hacker attacks and partly on their own failure to configure the Web site to handle the traffic load generated.

■ Inverse Network technology estimates that the call failure rate last month for 13 top Internet service providers was about one in eight — down substantially from March, when more than a fifth of all calls failed. For America Online alone, more than a third of all calls last month failed.

By the way, when I asked for Inverse's latest reliability figures for this column, my contact at Inverse said, "I'm E-mailing that out right away." And she did — but the information didn't arrive in my in-box until an hour later. Guess the message just stopped off for a beer on the way or something.

When even the 'net experts can't get it to perform promptly, it's a sign that significant improvement is needed before it's ready for regular business folks. □

Wagner is Computerworld's senior editor for electronic commerce and the Internet. His Internet address is mitch_wagner@cw.com.

expiration date.



Introducing the Optiset E family. The world's most efficient phones.

Most of today's advanced technology will be outdated tomorrow. So how do you provide tools that grow and change with the times? You stay flexible.

At Siemens, flexibility runs in the family: The high performance Optiset E digital phone family. Five separate models and nine different snap-in modules meet your every need, including the lowest cost entry level digital phone. Your number one need — ease of use — is made possible by OptiGuide, a highly intuitive interface allowing users to master advanced features.

Our exclusive modular approach lets you go from basic voice to advanced data and video communications and beyond — adopting new technologies as you need them.

The Optiset E family can do almost anything, because it does one thing exceptionally well: Evolve. Do a little evolving of your own, stop by www.siemenscom.com/optiset. Or call 1-800-765-6123 ext. A18.



The Future Is Coming To Us.

NEW PRODUCTS

LIBERTY INTEGRATION SOFTWARE, a subsidiary of General Automation, Inc. has announced Web Publisher, software to let users build interactive World Wide Web applications using a MultiValue database.

According to the Vancouver, British Columbia, company, Web Publisher works with popular Web, Hypertext Markup Language and Java publishing tools to build custom applications to provide easy access to existing MultiValue database environments. It works with popular Web browsers and doesn't require C programming.

It costs \$495.
Liberty Integration Software
(714) 250-4800
www.genauto.com

MACROMEDIA, INC. has announced Authorware 4 Interactive Studio, software tools for creating World Wide Web-based interactive learning applications for corporations.

According to the San Francisco company, new features in the latest version include the ability to incorporate all Macromedia Shockwave file formats in Shockwave Authorware applications, including Director, Flash and Shockwave Audio. Corporate intranet users can more easily maintain an online distance learning application made with Authorware, so the content in an online catalog can be updated via the Web without having to modify the logic of the application.

Authorware 4 costs \$2,999.
Macromedia
(800) 326-2128
www.macromedia.com

transaction no. 0079114568

LOGGED SECURED AUTHORIZED BILLED

THERE ARE TWO THINGS BERND BETSCHMANN, SWISS BANKER, CANNOT DO WITHOUT.





ONE IS HIS MORNING BATH.

THE OTHER IS HIS WINDOWS NT[®] SERVER.

When Swiss bankers make Internet transactions, they do it on a Tandem[®] Windows NT Server-based system. And they do it with the security that Tandem brings in handling 90% of the world's stock transactions, 80% of all ATM transactions, 66% of all credit card validations, and two-thirds of all 911 calls in the United States. Tandem's cost-effective solutions for modular growth in the areas of finance, retail, telecommunications, insurance and elsewhere now bring business-critical reliability to every customer, for every transaction they make. Contact us at www.tandem.com for more information. Or call 1-800-NONSTOP, ext. 8003 to receive our latest information pack which includes the new Windows NT Enterprise Management Sampler CD.

Every second, every transaction, every customer counts.

 **TANDEM.**
reliability, no limits.



ADVANCED DATA SOLUTIONS FOR CORPORATE CHALLENGES

Has your present
technology left gaps in
your communications
network?

Consult with Sprint's data experts for a comprehensive solution to link your disparate communications networks. Sprint's Frame Relay Service can connect your e-mail, private line, and SNA networks, plus give you Internet access over the same seamless network. This commitment to meeting your needs is why we operate the world's largest public data network and were the first to announce public frame relay service nationwide. Because we believe you should expect nothing less from a worldwide leader in data communications. www.sprint.com/sprintbiz 1•800•588•DATA



We help your business do more businessSM

The Enterprise Network

LANs • WANs • Network Management

Briefs

Mail call

E-mail is the most widely developed networked application. About 90% of corporate workers use it.

Source: Zona Research, Inc., Redwood City, Calif.

BindView tracks assets

Houston-based BindView Development Corp. has added an asset-management option to its namesake tool kit for analyzing user and security data in the directories of Microsoft Corp. and Novell, Inc. servers. NETInventory audits the hardware and software configuration of each user's PC to help manage changes, plan upgrades and track software licenses. Pricing starts at \$695 for one console and from \$9 to \$24 per node.

3Com management

Seeking to simplify network management tasks, 3Com Corp. in Santa Clara, Calif., is including SmartAgent software in new hubs and switches so authorized users can configure or troubleshoot the devices through a browser interface. 3Com plans to Web-enable the rest of its internet-working gear to help managers of small networks and to complement its Transcend enterprise management tools.

LAN modem links

Shiva Corp. in Billerica, Mass., recently released Shiva Dial-Out software for Windows NT Workstations on networks outfitted with Shiva remote access server. The software lets PCs make outgoing modem connections, eliminating the need for individual modems and telephone lines. The software is available now. Shiva customers can download it for free from the company's Web site at www.shiva.com. It requires ShivaOS 4.5 or higher and is shipping with the Shiva LanRover product line.

User plea: One directory for all

► Meta directories save money by simplifying information structure

By Barb Cole-Gomolski

MORE THAN a year into a project to consolidate all the directory data on his users into a single browser-accessible database, and Tim Brandt is less than half done. But he's still ecstatic.

The project's goal is to eliminate the need to search at least five major directories of electronic mail, the telephone system, network operating systems and other applications to locate employees.

The directory now stores data for about 30,000 of the company's 65,000 employees.

But Brandt, a senior consultant at a large manufacturer in the Midwest, said he is happy to have gotten this far because there is no master plan for building a meta, or universal, directory.

Meta directory pros

- Lowers administration costs
- Improves user access to directory information
- Helps deployment of electronic-commerce applications

Meta directory cons

- Requires a lot of custom programming
- Requires consolidating information from directories that cross departmental boundaries

For example, it took Brandt three tries to determine that the human resources directory should be the standard format after attempts at using the telephone directory and Banyan Systems, Inc.'s StreetTalk proved futile because of proprietary interfaces.

Meta directories synchronize information from various directories and present it in a single view to end users. They also present a single place from which to manage user informa-

tion, which cuts administration time and costs.

Electronic-commerce applications will probably rely heavily on directories to track security certificates and find information about individuals across companies, said Jon Oltsik, a senior analyst at Forrester Research, Inc. in Cambridge, Mass.

A recent study by the research firm showed that the average Fortune 1,000 company has 181 directories and that 42% syn-

Meta directories, page 49

• Third-party management utilities

Users shore up Win NT weaknesses

By Laura DiDio

WINDOWS NT users who are weary of grappling with the operating system's multiple management facilities are turning to third-party products that combine the functions of several utilities in one package.

That is because, with the exception of System Policy Editor, Microsoft "hasn't significantly enhanced the baseline Windows NT management utilities for the past two years," said David Sheridan, an instructor at Tech-Teach International, Inc. in Arlington, Va. Tech-Teach offers Windows NT training classes (see related story, page 49).

System Policy Editor replaced

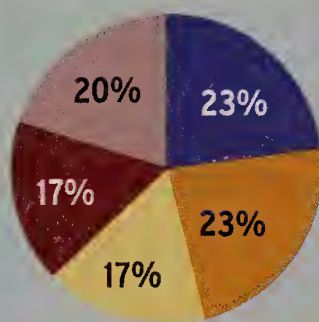
an earlier, more unwieldy utility in Windows NT 3.51 to let administrators restrict and modify Windows NT Workstation and Windows 95 desktop configurations.

"Microsoft has left a lot of critical items off Windows NT administration, and the ones they do address are a pain to use," said Scott Rackliffe, assistant vice president of information systems at Farm Credit Financial Partners, Inc. in Agawam, Mass.

For example, to discover the trustee rights of a group or a user, Rackliffe said he must go into File Manager and highlight a directory, select and call up the permissions object

Win NT weaknesses, page 49

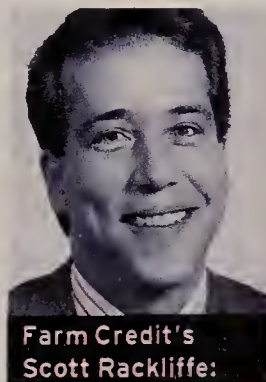
What is your top network management problem?



- User account management
- Security
- Software updates
- Performance management
- Disk quota management

Base: 500 Windows NT shops

Source: "Windows NT Tools Electronic Newsletter," Clearwater, Fla.



Farm Credit's Scott Rackliffe: Microsoft has left critical items off NT administration

TROUBLESHOOTING Spec shows how apps perform

By Patrick Dryden

AN EMERGING technique for measuring the performance of client/server applications gained troubleshooting capabilities last week.

The Application Response Measurement (ARM) specification, pioneered last year by Hewlett-Packard Co. and Tivoli Systems, Inc., provides hooks within vital business programs that enable external tools to monitor response times.

Vendors and users in the ad hoc group that defined the application programming interface (API) last week proposed two more functions. They beef up the API's performance monitoring focus by revealing troubleshooting details.

"We can monitor system and network performance, but we need a way to determine if our applications are functioning correctly," said Dennis DeMari, technical services manager at Factory Mutual Engineering Associates in Norwood, Mass.

ARM is catching on as a way for managers to provide "meaningful service-level statistics" to users through "a view from the application's perspective instead of just from the network and the systems," said Frank Henderson, chief technology officer at Netplex, a systems integrator in McLean, Va.

Organizations such as Boeing Commercial Airplane Group and Citicorp participate in the ARM working group and are taking steps to outfit their applications with the evolving API.

Monitoring transaction response time promises to be a proactive way to detect emerg-

App performance, page 49

The ARM spec addresses the need for reporting service levels and isolating problems.



[*Other Year 2000 vendors*]

**BY THE TIME THEY
HAVE OUR EXPERIENCE,
IT WILL BE TOO LATE.**

Year 2000 is right around the corner. And time is running out on choosing the right solution for your business. So why not go with the company that has more Year 2000 experience than anyone else in the world? Peritus.

With Peritus you get unmatched flexibility, performance, and scalability. And only Peritus provides a full suite of Year 2000 conversion alternatives to meet your needs, from data expansion to logic correction, and capabilities such as comprehensive identification. Which means you can create a tailored Year 2000 solution that's right for you, whether your system is mission-critical or at the end of its life cycle.

All this, plus peace of mind from partnering with the world's leader in creatively managing the installed software base. In fact, our Year 2000 solutions are only one of the many solutions available from Peritus. We're changing the way people think about software. And we're giving people the power to make more business choices than were ever thought possible.

Call Peritus today at 1-800-598-7787 for more information, or visit our web site at www.peritus.com. Before it's too late.



CREATIVE EXCELLENCE IN SOFTWARE EVOLUTION

Meta directories

CONTINUED FROM PAGE 47

chronize their directories manually.

The survey also showed that meta directory projects aren't high on most chief information officers' lists of priorities, Oltsik said. Making matters worse, most companies don't have a person or team in charge of directory management, he said.

Brandt said he would achieve better results if there were a way to make directory data easier to synchronize. The software he uses, Via from Zoomit Corp. in Toronto, takes redundant directory information and turns it into a single entry. But the system doesn't always recognize that, for example, Timothy Brandt

and Tim F. Brandt are the same person, he said. That's why so much of the firm's data has been left out of the directory.

Zoomit, which introduced its first meta directory about a year ago, this week will announce an upgrade and a single-log-on product that company officials said will make it easier for Via to synchronize directories.

The new version, due to ship by year's end, adds support for several Internet protocols, Netscape Communications Corp.'s Directory Server, the developer's release of Microsoft Corp.'s Active Directory and Novell, Inc.'s Novell Directory Service. The software already supports 15 oth-

er directories. The log-in service lets Windows 95 users access multiple systems by using one name and password. Because the log-in service is linked to all the directories on a network, it will automatically improve the product's ability to recognize users, company officials said.

HARD SELL

"The meta directory is on our list of things to do, but it's hard to make it a priority," said Terry Mitchell, an architecture planning analyst at Consumers Gas Co. in Toronto. Mitchell said meta directories are a tough sell because "people just think it's another directory."

If the utility can get its project going, it will gain a single point of control over directories stored in Lotus Development Corp.'s CC:Mail, Microsoft's Windows

NT, Novell's NetWare and several in-house applications. "A meta directory pulls it all together," Mitchell said. "But it's not something you load on a Friday night and have running on Monday morning."

Nevertheless, meta directories have caught the attention of large sites that need to solve the problem now. Microsoft has helped to raise the issue by hyping its Active Directory, which will be available next year. □

App performance

CONTINUED FROM PAGE 47

ing problems and track performance levels, according to George Sullivan, director of the Citibank systems and network management resource center in Reston, Va.

The proposed enhancements to the ARM API specifically address the need for reporting service levels and isolating problems, Sullivan said.

The original set of six simple calls lets developers label the key business transactions at the heart of their client/server applications, for example, and identify the start and stop of each transaction. Then information systems managers can apply tools directly to those applications, measuring the response time experienced by users.

MORE INFORMATION

Two enhancements are expected this fall in the ARM 2.0 developer's kit so that developers can reveal more details.

The end-to-end response time can be subdivided into components, so monitoring tools can decipher how long the transaction took to pass through the client, the network and all servers before completion.

And response times can be put in context by new variables, so monitoring tools can determine if a problem exists based on expected vs. actual transaction time.

"This next step is great for troubleshooting," Henderson said. When a monitor detects slowed performance by an application, "we can quickly focus attention on a problem with the database back end or with a router port," he said.

Vendors that already support the current ARM API in their monitoring tools include BGS

Systems, Inc., Candle Corp., HP and Tivoli. Also, Unify Corp. includes support in its development tools.

Support is on the way from vendors such as Compuware Corp., Landmark Systems Corp., Oracle Corp., SAS Institute, Inc. and SES, Inc.

Growing support for the ARM API bodes well for future applications rather than those that IS managers are running or deploying now. Current applications must be upgraded to include the ARM calls, and even proponents acknowledge that defining individual transactions can be difficult.

"We could track application performance easily on mainframes. But now, many different servers are involved, and separate functions run all over the network. It's very difficult to make sure an application is running and measure how it's running."
— Dennis DeMari, Factory Mutual Engineering

For example, DeMari is investigating ways to evaluate the performance of applications this month. The ARM API and compatible monitoring tools promise advantages for an order-management application because that project is just beginning, he said.

But to track the performance of another application that is being deployed now, DeMari said, "we're under a time constraint, so the alternative is buying canned packages." □

Win NT weaknesses

CONTINUED FROM PAGE 47

and then repeat the process for each directory.

Last year, Rackliffe's biggest complaint was the dearth of tools to manage Windows NT Server domains and the file servers themselves.

Users turn to third parties to circumvent problems such as how to meld various management facilities into a single interface, manage disk quotas and restrict concurrent log-ins.

One popular tool is Hyena, from Adkins, Texas-based Adkins Resource, Inc. It shipped in March and costs \$99 for a single-user license and \$699 for a site license. Hyena melds sever-

al of Windows NT's basic management functions into a browser interface. Hyena lets administrators manage user accounts, servers and workstations on the network.

THIRD-PARTY PRODUCTS

Competitors include Computer Associates International, Inc.'s Cheyenne division in Roslyn, N.Y., which sells the ArcServe backup software, and CA itself, in Islandia, N.Y., which offers Unicenter for NT, an integrated scheduling, security and backup package. Intel Corp. in Santa Clara, Calif., sells LANDesk, a set of administration tools for

Windows NT.

Peter Tagatac, a Windows NT engineer at Merrill Lynch & Co., a brokerage firm in New York, called Hyena an "invaluable tool" that saves him hundreds of configuration and setup hours each month.

"Hyena is the best product on the market right now for melding the functionality of several management utilities into one," Tagatac said.

He said he no longer opens up multiple, separate utilities to perform routine functions such as tracking active sessions and creating shares to make directories accessible to all users on the network. "The load times for each of the Microsoft utilities are too long for a large environment. Considering that we now have 5,000 users and are growing to 28,000 within a year, the time savings is phenomenal," he said.

REDMOND ANSWERS

Later this year, Microsoft Corp. will buttress its own management capabilities when it ships the Microsoft Management Console (MMC), an add-on package that will provide users with a unified mechanism to manage the Windows NT Servers and services.

"Microsoft's MMC will unify many of the bits and pieces of the operating systems. But it's eventual, not immediate," said David Strom, president of a consulting and testing firm in Port Washington, N.Y.

MMC will ship with Microsoft's Internet Information Server 4.0 in the third quarter and eventually will ship with every Windows NT-based product. □

Microsoft's management tools

Microsoft has embedded the following management facilities into the base Windows NT operating system:

- ▶ **User Manager** lets administrators create and delete users and control user rights.
- ▶ **Server Manager** controls what processes are running and who accesses the server.
- ▶ **Disk Administrator** manages the Windows NT disk partitions and lets administrators control the fault-tolerance configurations.
- ▶ **Performance Monitor** lets administrators monitor local and remote system and network events and statistics.
- ▶ **Backup Utility** performs local and remote backups.
- ▶ **Event Viewer** lets administrators view Systems, security and application-oriented events and the results of security audits.
- ▶ **System Policy Editor** lets administrators restrict and modify Windows NT Workstation and Windows 95 desktops.
- ▶ **Windows NT Diagnostics** lets administrators view system configurations such as device drivers and hardware resources.
- ▶ **Network Client Administrator** lets administrators automatically install client software over the network.
- ▶ **License Manager** lets administrators control how client access licenses for NT Server are distributed. — Laura DiDio

ARMED FOR MONITORING

Enhancements to the ARM programming interface will add two more capabilities:

- 1** Identify the specific components of a transaction to discover the cause for slow response time
- 2** Let monitoring tools separate slowdowns based on expected and actual transaction-response times



IBM and OS/390 are registered trademarks and IBM S/390 Parallel Enterprise Server, Parallel Sysplex, OS/390 and Solutions for a small planet are trademarks of IBM Corp. The individual and situation presented are fictitious. Any similarity to an actual person or situation is merely

web-enable your S/390 server
and you'll easily handle
those huge swells of e-business info.

indiana manager rides tsunami of information!

Indiana CIO Brian Evans has a handle on the incoming tidal wave of corporate information. His Web-enabled IBM S/390 Parallel Enterprise Server™ takes care of just about anything the Net throws his way.

Everybody, it seems, is rethinking the role of the powerful S/390® server. Its superior throughput has made it the hyper-fast computing wizard of the '90s. "It runs the hottest new applications and our intranet, too," reports Brian.


By using S/390 Parallel Sysplex™ clustering technology, companies are

getting the continuous computing they crave. At a low incremental cost. And with secure OS/390™ Web server, IT staffs can easily and safely meet ever-expanding transaction needs.

Find out how you can ride those big waves of corporate info, and get a new independent study about solving today's Internet and intranet challenges. Visit www.s390.ibm.com to learn more.



Solutions for a small planet™



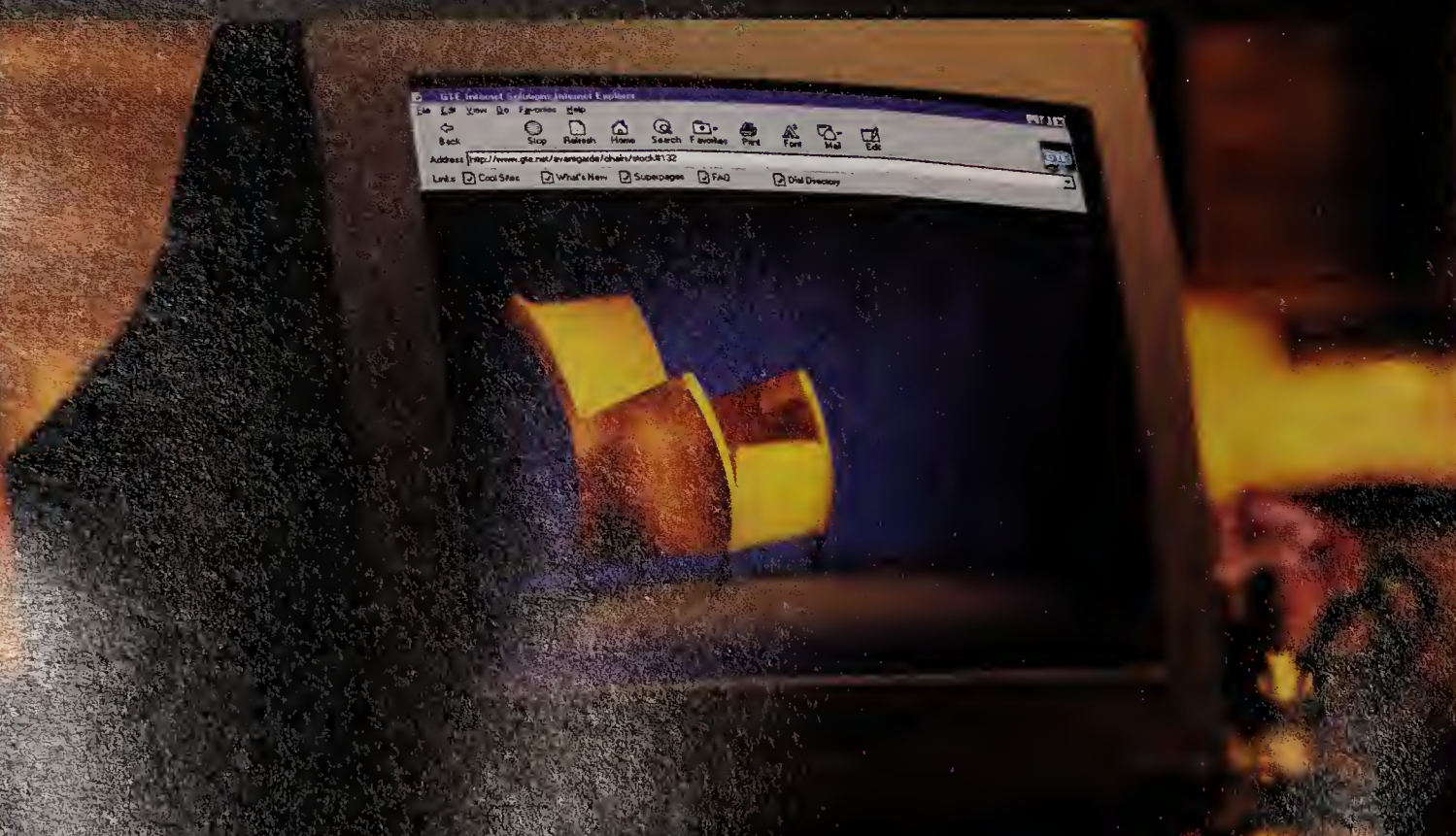
**MOST CLIENTS DON'T HAVE TIME
TO VISIT A FURNITURE SHOWROOM.**

**SO HOW ABOUT A COFFEE SHOP
ON ELM?**

We knew we had some of the most innovative furniture designs ever envisioned. The challenge was getting our clients to see it too. That's where GTE came in with their World Class Network[®]. They'd already wired some local coffee shops with fast ISDN access. So when they put us on the Web, we were able to share our latest creations over a cup of French Roast. Now we're not only in the business of making furniture, we're in the business of moving it.



IT'S AMAZING WHAT
WE CAN DO TOGETHER.



Let GTE put technology to work for you - wherever you do business.
1-800-GTE-4WCN (483-4926) ext. 313. www.gte.com/Wcn

©1997 GTE Service Corporation. The World Class Network is a registered service mark of GTE Service Corporation. Service available in most GTE areas.

Software

Databases • Development • Operating Systems

Briefs

Meta data searches

Logic Works, Inc. in Princeton, N.J., has upgraded its Universal Directory software for inventorying and searching meta data, the explanatory information that acts as a card catalog for data warehouses. Universal Directory 1.5 adds an ActiveX programming interface and support for automating updates of meta data directories. The software starts at \$30,000 and runs on Windows NT servers and PC clients.

Visual Basic bridge

Pacific Software Publishing, Inc. in Bellevue, Wash., recently released VB Bridge, a connectivity software program that lets Visual Basic applications run using Microsoft Corp.'s Internet Server Application Programming Interface (ISAPI). Until now, Visual Basic program access was mainly supported via Common Gateway Interface scripts and not through ISAPI. VB Bridge is shipping now for \$99; after Sept. 1 it will cost \$179.

New PeopleSoft units

PeopleSoft, Inc. in Pleasanton, Calif., has announced the formation of two new business units to cater to the needs of the service, communications, utilities and transportation industries. PeopleSoft set up the units to help tailor its application package to specific industries.

Computer languages in use at companies worldwide

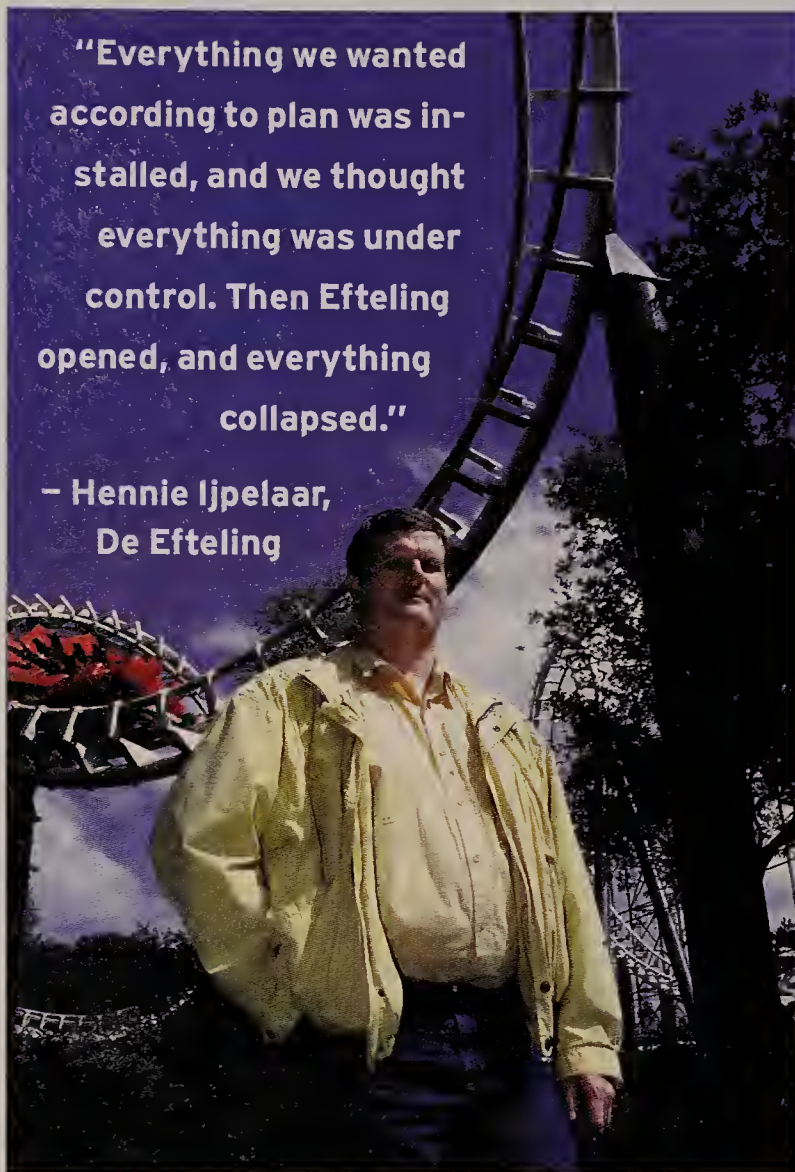
C	44%
Cobol	42%
C++	27%
Assembler	24%
PowerBuilder	18%
Visual Basic	18%
Other	95%

Base: 1,000 companies worldwide; multiple responses allowed

Source: 1996 Worldwide Benchmark Project from Rubin Systems, Inc., Pound Ridge, N.Y.

"Everything we wanted according to plan was installed, and we thought everything was under control. Then Efteling opened, and everything collapsed."

— Hennie Ijpelaar,
De Efteling



One wild ride

► Dutch amusement park whips system into shape after data overload crashes installation

By Randy Weston
KAATSHEUVEL,
THE NETHERLANDS

INSTALLING SAP AG's R/3 can be a roller coaster of a ride.

Fortunately for the employees at De Efteling BV amusement park in eastern Holland, roller coasters are their business. So when the park's

new computer system based on R/3 collapsed soon after the park's opening day last year, the staff at De Efteling had to act quickly to recover.

"In April of 1996, we were ready to open," said Hennie Ijpelaar, manager of information and automation at the park. "Everything we wanted according to plan was installed, and we thought everything was under control. Then Efteling opened, and everything collapsed."

Ijpelaar said the problem was less with R/3 than with one as

old as computing — "garbage in/garbage out." Too few people were trained well enough on the system, and many were loading bad data. That caused R/3 to spit out faulty reports.

Those reports are a vital part of managing the rapid growth of the 45-year-old park. De Efteling originally was a collection of sports fields built by two local priests for area youth.

It has since become a full-scale amusement park with more than 3 million visitors from April through October — much like a Dutch Knott's Berry Farm.

Visitors no longer play soccer but instead ride a quadruple-loop roller coaster, play golf at a newly opened course and stay at a new 120-room hotel.

And De Efteling's staff must use an R/3 system to manage

SAP R/3, page 54

• Java applet lets public take closer look at planet

You, too, can search for life on Mars

By Sharon Gaudin

EVERYONE AT Sun Microsystems, Inc. has been saying that Java is out of this world. Now it seems the technology may actually be getting pretty close.

NASA's Pathfinder lander module touched down on Mars on July 4 and started sending back photos from the surface of the red planet within 24 hours. NASA developers have been counting on a Java applet to send those pictures from a central database over the Internet to scientists and the curious public.

"The Java applet allows the public and our scientists to look at the photos from the mission," said Paul Backes, a technical group leader at NASA's Jet Propulsion Laboratory in Pasadena, Calif. "There is a 360-degree mosaic of images from the landing rover. Anyone can use their browser to download the applet, make a 3-D rover



NASA's Java applet gives users a closer look at photos from the Mars Pathfinder mission

drive over a terrain map and take a closer look."

Sponsored by Sun, the World Wide Web site with the Java applet is at mars.graham.com/wits. The applet can be downloaded through a browser to give a user a tour of the surface of Mars. Photos from Mars have been available at the site for the past week.

Backes said he initially had some concerns — based on comments from critics — that

Java wouldn't execute commands fast enough to handle the job. But days after the landing, speed hasn't been a problem, he said.

"Our first use of Java and the Internet to bring this information to the public is working out great," Backes said. "There would have been no other way to do it. Java is the enabling technology. Think of all the people who are experiencing Mars

Java applet, page 54

IBM brews Java tools

IBM last week announced the general availability of VisualAge for Java and a companion tool kit, VisualAge WebRunner. The firm also previewed a technology called Bean Dipping, which can add functionality to existing JavaBeans.

VisualAge for Java is a visual development environment for programmers who work in the Java object-oriented programming language. VisualAge WebRunner uses JavaBeans components, wizards and other tools to help novices build simple JavaBeans components.

The Bean Dipping technology would let developers add functionality such as licensing, security and network management capabilities to existing JavaBeans.

— Elizabeth Heichler,
IDC News Service

SAP R/3 installation

CONTINUED FROM PAGE 53

the \$65 million per year generated by those visitors.

Project leader Ijpelaar blamed much of the early R/3 struggles on a lack of testing and the fact that there wasn't enough memory to handle the volume of data loaded into the system. "There was much more data than we thought there would be," he said.

De Efteling staffers thought 16G bytes of extended memory on their Sun Microsystems, Inc. SPARC application server would be enough to handle the load. It lasted two weeks. "We are adding 1G byte each month," Ijpelaar said.

So the park's R/3 project team launched the "Tussenspint" program, Dutch for "in between run," a sort of in-

flight repair job. Originally estimated at about \$2 million, the project's cost shot up to about \$3 million.

"We did training of the staff to make sure no rubbish was going into the system," Ijpelaar said. The Tussenspint also involved going through the data, tossing the bad and rearranging the good so the data was uniform throughout the system and could be used by operations analysts.

As of this year's opening day, all was running smoothly.

Barry Wilderman, an analyst at Meta Group, Inc. in Stamford, Conn., said De Efteling's experience demonstrates that such problems can be costly and can set projects back significantly. He said the key to avoiding such setbacks is testing.

"There's no rocket science here, but the key is to get the appropriate data and to simulate, simulate, simulate this stuff in a lab environment," Wilderman said. "You have to work hard to understand what your transaction volumes are."

The new system gives end users such as facilities manager Rob Papavoine more information than the legacy mainframe system — an IBM System/34 and System/36 that run 30 different applications with 60 interfaces.

A PRICE TO PAY

But Papavoine said the new ability to analyze data and better plan inventory — from staple items such as cotton candy tubes and cleaning fluid — didn't come without a price, namely time.

"To order one simple item [on the mainframe], within a minute we could have an order put out," Papavoine said. "Now, it takes five or six minutes, be-

cause we have more sophisticated data and we have to have a lot more input. It was disappointing in the beginning, but it's getting faster and faster as we get used to it."

Papavoine also said knowing why they are pouring in more data — specifically to get better output — makes it worthwhile. With the old system, for example, managers had no idea what was in stock at any given time.

"We didn't have official stock, but we had a lot of stock," Papavoine said. "We are already seeing a great advantage with the forecasting ability of R/3. But the information is only as good as the data put in. That's what we learned the first year."

Now, De Efteling staffers know exactly what they have on the shelves and what needs to be ordered. The result: Inventory has been cut in half. □

Eric Verweij, news editor at Infoworld Netherlands, contributed to this story.

Java applet allows views of Mars

CONTINUED FROM PAGE 53

because of Java."

Jim Ryan, a professor and astrophysicist at the University of New Hampshire in Durham, N.H., said viewing Mars photos over the Internet gives him and the public an amazing advantage over past experiences as NASA watchers.

"Back in 1969, we were all watching the lunar landing, and if you weren't right there at your TV at the right time, you missed it," Ryan said. "Now, I can log on to the Internet site a day later, or a week later, and I can still see what happened."

Ryan said the only difficulty he had

was finding the Web site with the Java applet. He said it was tough to find the link from the official NASA page. He said he could link up only after he was given the site address.

Backes said clarifying the directions to the site is the only problem that needs to be fixed at this point.

The applet doesn't control anything on the actual mission, but only enables people to view the photos over the Internet, Backes noted.

The Pathfinder mission is actually a trial run for another Mars mission scheduled for 2001.

Because this mission is only expected to last about a week or two, most of the scientists involved can work out of the Pasadena laboratory.

But the mission scheduled for 2001 is expected to last about a year, so scientists will need to access information over the Internet so they can work from their home offices.

"We went with Java because it's so easily deployed over the Internet," Backes said. "Before, when we needed to have remote scientists access photos, we'd have to send them all computers so we knew they were all running on the same platform. That would also mean that we'd have to do remote maintenance on

all those machines."

Because Java is platform-independent, Backes said he doesn't have to worry about what platform his scientists are using. "We're going to spend a fraction of what was spent before. That way, there's no limit to the number of users we can have."

Heather Ashton, a research analyst at Hurwitz Group, Inc. in Newton, Mass., said the NASA experiment is a good example of putting Java to real business use.

"To be able to go up and grab the same information off the Internet — regardless of what platform you're on — is important to a lot of businesses," Ashton said. □

A list of Mars-related sites is available at the NASA home page (www.nasa.gov). The Web site discussed in this story is at mars.graham.com/wits.

wrk/grp

Making New Platforms Work!

Migrating to Unix or Windows?

Our cross-platform solutions have been chosen by over a thousand companies, including A.C. Nielsen, AT&T and G.D.Searle.

Data Management Tools

- **netCONVERT** - Intelligent file conversion. Mixed character and binary numeric (packed) data between MVS, VM, Unix and Windows.
- **TMS/IX** - Mainframe-style tape management system for Unix and Windows
- **COSORT** - High performance sort alternative for Unix and Windows.

Programmers Tools

- **uni-SPF** - ISPF-style editor, utilities and Dialog Management Services.
- **uni-REXX** - IBM's popular system control and macro language.
- **uni-XEDIT** - VM/CMS-style editor, character mode or X-based GUI.

(800) 228-0255

sales@wrkgrp.com
<http://www.wrkgrp.com>

wrk/grp
The Workstation Group

NEW PRODUCTS

TEXTWARE SOLUTIONS has announced Instant Text 2.0, a text abbreviation software system.

According to the Burlington, Mass., company, Version 2.0 was designed for casual users of word processing programs such as Microsoft Corp.'s Word or Lotus Development Corp.'s WordPro. Using a word or a phrase advisory, a typist can enter a few letters that are automatically expanded to whole words and complete phrases.

Instant Text 2.0 costs \$99.

Textware Solutions
(617) 272-3200
www.twsolutions.com

INFORMATION ELECTRONICS, INC. has announced Eureka Gold, software that has artificial intelligence to determine whether electronic mail sent to a location is junk mail.

According to the St. Simons Island, Ga., company, Eureka Gold with Anti-Spam installs on E-mail servers. It was designed for high-volume instal-

lations, but company officials priced it for small enterprises. Anti-Spam definition updates are available for free.

Eureka Gold costs \$1,000.
Information Electronics
(912) 638-1893
www.ie.com

SOFTKIT TECHNOLOGIES, INC. has announced Live Access, software that uses hyperlinks, visual content browsing and imaging to increase information retrieval abilities.

According to the Montreal company, users can link and access documents that reside anywhere in their computing environment, including the Internet. Using features called Live Guide and Live Space, users can create a custom hierarchy and link documents to drawings, maps and images.

Live Access costs \$195.
Softkit Technologies
(514) 393-3467
www.softkit.com

Servers & PCs

Large Systems • Workstations • Portable Computing

Briefs

Apple notebooks

Apple Computer, Inc. today is slated to announce refreshments to the 166-MHz model of its PowerBook 1400 notebooks and reduce the price of its 133-MHz version. Apple will add a 2G-byte hard drive and an eight-speed CD-ROM drive to the 1400C/166. It will cost \$3,500. The 1400CS/133 will get a 1.36G-byte hard drive and an eight-speed CD-ROM drive. It is expected to cost \$2,500. The midrange PowerBook 1400 line hasn't been changed since it was introduced late last year.

IBM ships chip

IBM is shipping its long-delayed PowerPC 604E chip. The chip was slated to ship in the second half of last year. It is a faster, lower-power version of the high-end PowerPC 604 chip. The 0.25-micron processor will have an initial clock speed of 250 MHz and will power Macintosh systems and Unix servers and desktops from IBM. Faster versions of the chip will be available later this summer, IBM officials said.

New Timberwolf

Storage Technology Corp. in Louisville, Colo., is shipping a multiplatform robotic tape library for data warehousing, imaging and broadcasting needs. The Timberwolf 9740 can store up to 25T bytes of data using high-capacity tape cartridges. Pricing starts at \$68,000.

A lot of storage space

1991 storage requirements for Windows **11M bytes**

1997 storage requirements for Windows 95 **150M bytes**

1991 storage requirements for graphics software **7M bytes**

1997 storage requirements for graphics software **225M bytes**

Source: Peripheral Research Corp., Santa Barbara, Calif.

First Union stays on top of growing data load

By Tim Ouellette

BACKING UP is hard to do.

At First Union National Bank, that means reining in data from an ever-growing herd of distributed servers.

"We don't really know which project is going to hit us next or with what [server platform]," said Robert Gardner, a systems engineer at the Charlotte, N.C., bank.

SECURITY COMPROMISE

Like many companies across the country, First Union found that a rollout of distributed Unix servers can bring freedom from the mainframe but also can sacrifice the security and access to crucial data that the mainframe provided.

When the Unix servers were first introduced in early 1995, company officials didn't think they needed a comprehensive backup plan because they expected to install only about 30 servers in two years.

But now, less than two years



From left: Steve Plair, Robert Gardner and Kevin Mattingly are using SCH backup software to centralize and secure First Union's Unix servers and databases

into the project, Gardner and his staff manage and back up 2.5T bytes of data from more than 200 IBM AIX, Sun Microsystems, Inc. Solaris and Hewlett-Packard Co. HP-UX servers — with the prospect of 100 Windows NT servers going online in the next year.

Something had to be done because the move to distributed servers was part of a push to make the bank's computer network more amenable to the 2,000 branch offices spread throughout the country. The goal was more flexibility so First Union's 12 million customers

could gain easier access to their account information.

So the bank turned to a software package from Cincinnati-based SCH Technologies, Inc. The package scales up to handle the influx of new systems and acts as a basis for other add-on Bank, page 56

Sequent firms up its NUMA boxes

By Jaikumar Vijayan

USERS LURED by the scalability promise of Non-Uniform Memory Access (NUMA) architectures but wary of its relative newness in commercial environments may find some reassurance in a recent announcement from Sequent Computer Systems, Inc.

The Beaverton, Ore., vendor is adding features that give its NUMA servers, which first started shipping seven months ago, greater reliability, increased memory and more storage space.

NUMA technology is a performance-enhancing way of tying together small groups of processors into one large cluster of processors. For example, a 16-

processor server can be arranged into a cluster of four nodes with four processors each.

The technique allows vendors to extend server scalability beyond the limits imposed by symmetrical multiprocessing (SMP) architectures. Although most SMP servers stop scaling effectively after 16 processors, Sequent's NUMA servers now

ADDING MUSCLE TO NUMA

- Fiber-channel-based, high-availability clustering
- Up to 32 fiber-channel connections for enhanced storage access
- Very Large Memory support (up to 16G bytes of RAM)

handle up to 32 Intel Corp. processors and eventually will scale up to 252 processors.

By bringing high-availability clustering to NUMA, Sequent gives users a way to increase the reliability of their applications, Sequent, page 57

GM tests wearable systems

► Automaker hopes to nix return visits for fixes

By Bob Wallace

GENERAL MOTORS CORP. next month will begin testing a portable, voice-controlled, multimedia computer that it hopes will help technicians correctly fix more vehicles on the first visit.

The hands-free Mentis system includes a small computer that can attach to a person's belt and a headset through which technicians talk to the computer and view the data it provides (see illustration). Mentis was designed to be a train-yourself system that uses simple menus and forward and back options to guide users through the information it contains.

"It's estimated that only 70% of civilian and military vehicles are fixed correctly the first time around," said Jim Roach, head of service technology research at GM in Detroit. "The rest are fixed with too many parts or need a return visit. Thirty percent is a big target to shoot at."



Interactive Solutions' Mentis System leaves mechanics' hands free to work on cars

The Mentis system is made by Interactive Solutions, Inc. in Sarasota, Fla., and was introduced last week. Although GM will be the first Mentis beta site, an aircraft maker and the U.S. Army National Guard, among GM, page 57

Bank stays on top of growing data load

CONTINUED FROM PAGE 55

tools to do specific tasks for specific servers.

Called ReelBackup and ReelLibrarian, the software products let individual systems administrators send their crucial data to four tape drives in First Union's tape silo from Storage Technology Corp. in Louisville, Colo. The tape silo, located in the bank's Charlotte data center, also houses data from the mainframe, but ReelBackup can discern which drives are slated for client/server information.

"With the Reels products, you basically have a shell [doing backup], and then you have the capability to build additional tools around it to help you do specific things," Gardner said.

Backups now chew through 750 tape cartridges each weekend, estimates First Union's Robert Gardner. That's no problem for a product that targets high-end Unix backups.

For example, database administrator Steve Plair is integrating Autosys scheduling software from Platinum Technology, Inc. in Oakbrook Terrace, Ill., with the Reels products to monitor database and file-system backups and provide notification when backups are complete.

An important part of the up-front work for the client/server backup project was educating users on the importance of backing up their distributed data, then configuring the databases for proper backup with Reels, Gardner said.

He estimated that client/server back-

ups now chew through 750 tape cartridges each weekend. But that's no problem for a product that targets high-end Unix backups.

ReelBackup "is particularly well-suited

for backup of very large file systems such as multihundred-gigabyte databases that need online, hot backup," said a recent report by Strategic Research Corp. in Santa Barbara, Calif.

In fact, Gardner said the software is holding up well, but the tape hardware will need to be updated to handle the ever-growing load. The onus of managing so many different platforms rears its ugly head here, too, because tape hardware requires software drivers for each platform.

SCH is developing Reel add-ons aimed at backing up Oracle Corp., Informix Corp. and Sybase, Inc. databases and SAP AG's R/3 enterprise applications. □

Toshiba takes foray into Pentium II arena

By April Jacobs

TOSHIBA AMERICA Information Systems, Inc. is jumping into the Pentium II market with a pricey, well-equipped commercial desktop.

The Irvine, Calif., computer maker's Equium 6260M is a high-end minitower configuration that features a 266-MHz Pentium II processor, 32M bytes of RAM, a 16-speed CD-ROM drive and support for Universal Serial Bus technology and three-dimensional graphics. It costs \$2,799.

The computer is available now. It ships with Intel Corp.'s LANdesk Client Manager systems management software and Secure Sleep technology from Toshiba. Secure Sleep lets network managers access a system remotely — even when the system is turned off — by using an encrypted password to install or upgrade software on a client. □



Envision an enterprise that's

totally expandable,

infinitely scalable, completely compatible,

easily manageable, and entirely mobile.



*Actual results may vary depending on usage. ©1997 Acer America Corporation. Acer and the Acer logo are registered trademarks, and AcerAltos is a trademark of Acer America Corporation and Acer Inc. Intel, the Intel Inside Logo, and Pentium are registered trademarks of Intel Corporation.

GM tests wearable systems

CONTINUED FROM PAGE 55

others, have expressed interest in the system.

Information provided from Mentis can include full-motion video, CD-quality audio, three-dimensional animation, graphics and text. The technician dons

the headset with an eyepiece and accesses information by using voice commands, which leaves his hands free to work on the car.

If the technician needs additional data, he can access local databases by using a

wireless connection. Mentis soon will have a satellite uplink for use over long distances.

"The amount of information needed to fix motor vehicles is overwhelming," said Roach, who added that GM publishes 150,000 pages of repair procedures every year. "It'll be easier for technicians than lug-

Mentis "is a great productivity tool for many vertical industries."

— Diana Hwang, IDC

ging around huge repair manuals and spending the time needed to locate the appropriate information. A new process is needed because the old one just wasn't working."

Automakers and the military can use Mentis to keep pace with the advanced technology used in today's cars and tanks.

For example, a low-end Cavalier has four microprocessors, but a loaded Corvette has 12 processors used to run the car's instrument panel, air bag, engine and transmission, Roach said. "You need to have very high-technology systems to repair very high-technology vehicles."

Diana Hwang, an analyst at International Data Corp. (IDC) in Framingham, Mass., said wearable computers are still an emerging market, but Mentis "is a great productivity tool for many vertical industries." Mentis appears to be the first such system to offer multimedia support, she said.

The Pentium-based Mentis is about 1 in. thick and measures 7.5 in. by 5.5 in., which is about half the size of a laptop. It can be equipped with a flat-panel display and mounting gear. System prices range from about \$3,699 to \$8,000. □

Introducing Acer's mobile client server


**solution — the new way to truly realize
enterprise productivity.**

By extending the enterprise into virtual offices, and with an increasingly mobile workforce, it becomes vital to communicate and access critical company information. Anytime. Anywhere.

Acer's Mobile Client Server solutions provide connectivity, security, mobility, accessibility, and manageability. And help you increase productivity and gain a competitive advantage.

As one of the world's largest personal computer and component manufacturers, Acer has state-of-the-art notebooks, desktops, and servers, like the new AcerAltos™ 300 server series featuring the Intel® Pentium® processor. Plus, the channel relationships to optimize your solution and the resources to provide single-call service and support.

Acer's Mobile Client Server. The new enterprise solution that's infinitely expandable. And ultimately the most productive.

Acer 

1-800-558-ACER
www.acer.com/aacl



With an industry leading 7-hour single battery* notebook, Acer is redefining mobile solutions.



With a new, affordable network-ready PC, Acer has a range of solutions that make sense.



All Acer servers, at every level, have manageability built-in.



Sequent firms up NUMA servers

CONTINUED FROM PAGE 55

observers said. The company has introduced a fiber-channel-based interconnect technology that lets users link two NUMA servers in a high-availability cluster. In that setup, if one server goes down, the other automatically takes over.

The servers can be spaced as much as 10 km from one another, thereby providing users with disaster-tolerance and recovery capabilities, analysts said.

"It is good knowing that this kind of [high-availability] capability exists," said Ron Hawkins, director of technology at Millipore Corp. in Bedford, Mass.

"But instant fail-over is not something I need right now in our business environment," he said. Millipore, which uses a Sequent NUMA server to run database applications, takes it down every Sunday for regular maintenance, he said.

NUMA SUPPORT

In addition, Sequent also announced support for up to 16G bytes of Very Large Memory support on its NUMA servers. That kind of memory capacity lets corporations run large applications — such as entire databases — directly on memory, thereby boosting performance.

Gary Smaby, CEO of Smaby Group, Inc. in Minneapolis, said Sequent's moves to build up on a highly scalable computer architecture are imperative.

"Because Sequent is a small company competing with giants in the server space, they need to aggressively push the performance envelope," Smaby said. □



Fibre Channel
SCSI
Fast Ethernet
FireWire
RAID

For
MORE
network

bandwidth,

THINK
Inside
the BOX.

In their ongoing effort to beef up enterprise bandwidth, many IS professionals are now rethinking their long-held views. They've begun to look beyond the size of the pipe between the sites. And beyond the flow of data between servers and workstations. Because bandwidth is also inside the box.

Think of it as "System Bandwidth."

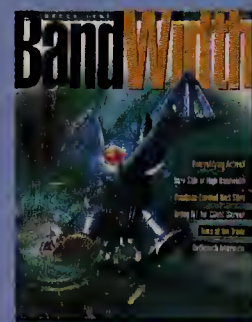
When you think about it, more systems are attached to your LAN than anything else. So, the surest way to boost enterprise bandwidth, is to increase system bandwidth. The bandwidth inside the box.

The CPU, memory, I/O bus, adapters, and storage subsystems each play a crucial role. If they're not properly tuned with each other and with the network, everything slows down.

It's Adaptec's business to improve system bandwidth. We're finding ways to move information faster, and to make data easier to manage.

From SCSI, Fibre Channel, and RAID to ATM and Fast Ethernet server NICs, we're improving system performance. And we're tuning systems specifically for high-speed network environments.

We're moving the information from memory to storage and from the server through the network to the desktop.



This view of bandwidth management is summed up nicely in a magazine with the same name. For a free copy of *Bandwidth*, visit our web site:

www.adaptec.com/bandwidth/ca

Read about leading IS professionals around the world who are addressing bandwidth at a system level. And while you're there, start thinking inside the box.

We Move The Information That Moves Your World.™

adaptec®

© 1997 Adaptec Inc. All rights reserved. Adaptec, the Adaptec logo and tagline are trademarks of Adaptec, Inc., which may be registered in some jurisdictions.

Manage the money!

To lower total ownership costs of your information systems, manage those costs better, Paul Strassmann writes. Page 62

Managing

CASHING in on YEAR 2000

You have a year 2000 problem and need some outside help. But be on guard! Some vendors are pushing magic fixes and overpriced help.



tHE PITCH WAS too good to be true. At a year 2000 conference in December, Philip Murphy was approached by a slick-talking salesman who claimed his company could convert any program at the National Council on Compensation Insurance, Inc. (NCCI) in Boca Raton, Fla., for \$100.

"It didn't matter whether the applications contained 3,000 lines of code or 300,000," said Murphy, manager of year 2000 compliance at NCCI, which provides workers' compensation statistics to insurance companies. "It sounded like a backyard operation run by Bubba and his three brothers."

Year 2000 speaker and consultant Peter de Jager remembers a conversation with a vendor representative who sought a product endorsement. The vendor told de Jager: "It doesn't matter how good this product is. If I can get even a little bit [of the market], I can make money." De Jager says he refuses to endorse any products.

BY ROBERT L. SCHEIER AND THOMAS L. HOFFMAN

Welcome to the sleazy side of the year 2000 industry: cashing in on what some hope will be a \$600 billion market ensuring that information systems can recognize the year 2000 although they were written to recognize only two-digit year fields.

Many honest vendors are doing good work. But there are some employment agencies charging 35% premiums for year 2000 work, unknown companies cold-calling IS managers to pitch magic cures and offshore vendors bidding for work even though they have no staff to handle it.

Cashing in, page 60

CASHING in on YEAR 2000



CONTINUED FROM PAGE 59

Even reputable firms are raising eyebrows. One industry group sells year 2000 "certification" that doesn't guarantee anything will actually work. Insurers sell year 2000 policies that require costly audits and only cover companies that are well along in solving the problem. One chief information officer claims vendors use "terror tactics" to scare nontechnical

CEOs into spending more than they should.

Sleazy vendors

One project manager at a financial services firm says the year 2000 is "magic" for contract programming agencies.

"As soon as I make the magic word happen," he says with a chuckle, "they want a 35% markup. We formed a tight alliance with our [human resources] department" to catch contracting agencies that previously offered the same programmers at lower prices for other work.

Lauris Nance, vice president and year 2000 project executive at business information services company Equifax, Inc. in Atlanta, says she's never seen as many cold calls as she receives for year 2000 tools.

Year 2000 Project Manager Jo Calk has learned to brush off claims of automated tools that will dramatically speed code conversion at Blackwell North America, Inc. in Lake Oswego, Ore. The firm sells

books and services to libraries.

"A lot of the changes ... cannot be done globally through all their magic programs," Calk says. "It's down and dirty plugging through the code."

Stephanie T. Moore, an analyst at Giga Information Group in Westport, Conn., says she's turned up "hundreds of sleazy vendors" with big claims and shady backgrounds.

A year 2000 project manager at an East Coast manufacturing firm got a proposal from an Indian firm that said, "Currently, we have no employees, but I can get all of my family members together to do this project." It didn't get the contract.

TIPS:

- Be wary of claims that automated conversion software is 99% or 100% accurate, Moore says. A 65% success rate is more realistic.
- Beware low-ball pricing, such as \$100 per program or 50 cents per line of code. Ask

if such prices include software licensing, service or other fees.

Pushy vendors

"Need some year 2000 work done? Then make it worth my while."

That's the attitude many big service providers take with clients. Vendors tell customers, "If you only want to give me year 2000 work, that's not big enough," says Patrick McBride, vice president and service director at Meta Group, Inc., a market research firm in Stamford, Conn. Vendors are pressuring customers to also buy long-term maintenance or data center outsourcing, he says.

"We have never tried to hold [customers] hostage for our year 2000 services by requiring them to buy something else," says Dale Vecchio, marketing director at Viasoft, Inc.

Brian Keane, a senior vice president at Keane, Inc., an applications development, outsourcing and integration services firm in Boston, says it hasn't turned down work or pressured clients to buy extra services. But he says, "We would always give higher priority to a customer who combined the year 2000 project with an application outsourcing deal."

TIPS:

- Know which of your systems must be fixed and when, to help you push back against vendor pressure.
- Prepare a list of systems or functions you could outsource if required.

Want insurance?

Want to insure yourself against year 2000 losses? Try this plan from insurance broker J&H Marsh & McLennan, Inc. in New York, with auditing services from year 2000 tool vendor Ascent Logic, Inc. in San Jose, Calif., and the New York law firm LeBoeuf, Lamb, Greene & MacRae.

First, don't apply unless you have a well-established year 2000 plan written, says Ascent Logic President and CEO Larry McArthur.

Second, the standard policy won't cover damage caused by microprocessors within devices such as elevators or fire-control systems, says Jeff Jinnett, president of a joint venture formed by Ascent Logic and the law firm to perform the audits. Nor will it cover failures in a customer's or supplier's system, he says, unless that third party also undergoes a year 2000 audit.

Third, the customer must pass a series of audits — which can cost upward of \$100,000 — of its year 2000 compliance. Finally, the customer pays about \$35,000 for each major business unit to license software from Ascent Logic to generate audit data, McArthur says.

The policy remains in effect only as long as the customer passes quarterly audits, which cost \$30,000 each. The policies, none of which has yet been issued, will cover up to \$200 million in damages. Premiums are expected to cost

several million dollars.

IS managers were skeptical of the insurance at a recent meeting of The Information Management Forum, an association of business and IS executives in Atlanta, says Managing Director Jim Jones.

The coverage limit is "a fraction of a day's run rate" for a large, multinational company, Jones says. And some executives considered it self-insurance "and they were self-insured for most things anyway."

Marsh & McLennan officials didn't return several calls seeking comment.

McArthur says the policies are probably most attractive to chief financial officers, spurred on by corporate lawyers and audit committees that fear lawsuits.

TIPS:

- Does the policy cover third-party damages or damages caused by embedded systems?
- How does the insurer determine if you're eligible for coverage?
- How much will you pay for audits, required software licenses or other associated costs?

Weak guarantees

One reason to buy year 2000 insurance is to prove to customers, shareholders and [if necessary] lawyers that you have a good year 2000 plan.

Hence the rise of certification programs, such as those run by the Information Technology Association of America (ITAA) in Arlington, Va. So far, about 30 companies have applied for and received the \$6,200 certifications, which will rise to \$8,200 on Aug. 1, says ITAA spokesman Bob Cohen.

But, as Cohen admits, the ITAA doesn't guarantee software written by or fixed by an ITAA-certified company will work in the year 2000. All it certifies is the process by which that company does its work.

Jones doesn't think the ITAA is doing anything wrong, but he says he's seen press coverage saying "that so and so products are certified by ITAA. That's clearly erroneous."

But one IS organization found ITAA certification enough to calm nervous customers. The audit "was also a very nice way to validate our own process," says Dan Lucas, systems development manager at Blackwell North America, Inc.

TIPS:

- Year 2000 certification may be less expensive than buying insurance, if your main goal is to prove you're working on your year 2000 problem.
- Get legal advice on how much protection certification actually buys you.
- If a vendor claims it or its product is "certified," ask exactly what is being certified and how the auditor defines "compliance."

Scheier is Computerworld's senior editor, management; Hoffman is senior editor, IS management.

Silver bullet? You decide

Is there a cheap, easy way to fix year 2000 problems?

Silver Bullet Solutions (SBS) in New York claimed it has one, in a Usenet posting headlined "IBM Finds Silver Bullet for Year 2000 Problem in 'Garage-Door' Partnership." SBS co-partner John Foehl declined to say how the silver bullet works, how long SBS has been in business, who past customers are or who at IBM praised the company. An IBM spokesman declined comment, and Foehl said such details are "not relevant at this point" and will be shared only with potential partners until SBS inks a marketing deal.

The posting (comp.software.year-2000) quotes an unnamed IBM staffer as saying, "It sounds like you guys have the silver bullet." It also claims SBS can expand date fields from two to four digits without stopping the affected systems or running parallel software or hardware, while greatly minimizing testing.

Pressed for detail, Foehl said the methodology hasn't been used for year 2000 work, but only for an "analogous situation."

"I'm skeptical," said William Ulrich, president of the Tactical Strategy Group, Inc., a Soquel, Calif., consulting firm. With the high profile of year 2000 problems, he said, "Where have they been all this time?"

A World Wide Web search for Foehl's co-partner, John DiPetto, found that name listed as holder of SBS's post office box — which was in the Usenet posting — and describes him as host of *Everyday Miracles*, a show on a Manhattan public access cable television network.

Foehl declined comment on any connection between the cable show and SBS. DiPetto's number rang an answering machine whose message said: "This is Johnny Angel. To receive a free list of left- and right-brain characteristics, please leave a question about life or a comment about my show, *Everyday Miracles*." — Robert L. Scheier, assisted by Mitch Betts and Rick Saia

CHANGE YOUR LIFE

- ☒ Yes, I want to receive my own copy of **COMPUTERWORLD** each week. I accept your offer of \$39.95* per year - a savings of over 73% off the single copy price.

First Name _____ MI _____ Last Name _____
Title _____ Company _____ E-mail address _____
Address _____ City _____ State _____ Zip _____
Address Shown: ☐ Home ☐ Business ☐ New ☐ Renew Single copy price: \$3.00/issue *U.S. Only. Canada \$95, Mexico, Central/South America \$150, Europe \$295, all other countries \$295.

Please complete the questions below.

- I. BUSINESS/INDUSTRY** (Circle one)
10. Manufacturer (other than computer)
20. Finance/Insurance/Real Estate
30. Medical/Law/Education
40. Wholesale/Retail/Trade
50. Business Service (except DP)
60. Government - State/Federal/Local
65. Communications Systems/Public Utilities/Transportation
70. Mining/Construction/Petroleum/Refining/Agriculture
80. Manufacturer of Computers, Computer-Related Systems or Peripherals
85. Systems Integrators, VARs, Computer Service Bureaus, Software Planning & Consulting Services

90. Computer/Peripheral Dealer/Dist./Retailer
95. Other _____ (Please Specify)
2. TITLE/FUNCTION (Circle one)
IS/MIS/DP MANAGEMENT
19. Chief Information Officer/Vice President/Asst. VP IS/MIS/DP Management
21. Dir./Mgr. MIS Services, Information Center
22. Dir./Mgr. Network Sys., Data/Tele. Comm., LAN Mgr./PC Mgr., Tech. Planning, Administrative Services
23. Dir./Mgr. Sys. Development, System Architecture
31. Programming Management, Software Developers

41. Engineering, Scientific, R&D, Tech. Management
60. Sys. Integrators/VARs/Consulting Management
CORPORATE MANAGEMENT
11. President, Owner/Partner, General Mgr.
12. Vice President, Asst. Vice President
13. Treasurer, Controller, Financial Officer
DEPARTMENTAL MANAGEMENT
51. Sales & Mktg. Management
70. Medical, Legal, Accounting Mgt.
OTHER PROFESSIONAL MANAGEMENT
80. Information Centers/Libraries, Educators, Journalists, Students
90. Other Titled Personnel

- 3.** Do you use, evaluate, specify, recommend, purchase: (Circle all that apply.)
Operating Systems
(a) Solaris (e) Mac OS
(b) Netware (f) Windows NT
(c) OS/2 (g) Windows
(d) Unix (h) NeXTstep
App. Development Products ☐ Yes ☐ No
Networking Products ☐ Yes ☐ No
Intranet Products ☐ Yes ☐ No
4. Which of the following products do you buy, specify, recommend or approve the purchase of? (Check all that apply.)
(a) ☐ Internet software
(b) ☐ Internet browsers
(c) ☐ Web authoring/development tools

COMPUTERWORLD

B4G7 W

CHANGE YOUR WORLD

- ☒ Yes, I want to receive my own copy of **COMPUTERWORLD** each week. I accept your offer of \$39.95* per year - a savings of over 73% off the single copy price.

First Name _____ MI _____ Last Name _____
Title _____ Company _____ E-mail address _____
Address _____ City _____ State _____ Zip _____
Address Shown: ☐ Home ☐ Business ☐ New ☐ Renew Single copy price: \$3.00/issue *U.S. Only. Canada \$95, Mexico, Central/South America \$150, Europe \$295, all other countries \$295.

Please complete the questions below.

- I. BUSINESS/INDUSTRY** (Circle one)
10. Manufacturer (other than computer)
20. Finance/Insurance/Real Estate
30. Medical/Law/Education
40. Wholesale/Retail/Trade
50. Business Service (except DP)
60. Government - State/Federal/Local
65. Communications Systems/Public Utilities/Transportation
70. Mining/Construction/Petroleum/Refining/Agriculture
80. Manufacturer of Computers, Computer-Related Systems or Peripherals
85. Systems Integrators, VARs, Computer Service Bureaus, Software Planning & Consulting Services

90. Computer/Peripheral Dealer/Dist./Retailer
95. Other _____ (Please Specify)
2. TITLE/FUNCTION (Circle one)
IS/MIS/DP MANAGEMENT
19. Chief Information Officer/Vice President/Asst. VP IS/MIS/DP Management
21. Dir./Mgr. MIS Services, Information Center
22. Dir./Mgr. Network Sys., Data/Tele. Comm., LAN Mgr./PC Mgr., Tech. Planning, Administrative Services
23. Dir./Mgr. Sys. Development, System Architecture
31. Programming Management, Software Developers

41. Engineering, Scientific, R&D, Tech. Management
60. Sys. Integrators/VARs/Consulting Management
CORPORATE MANAGEMENT
11. President, Owner/Partner, General Mgr.
12. Vice President, Asst. Vice President
13. Treasurer, Controller, Financial Officer
DEPARTMENTAL MANAGEMENT
51. Sales & Mktg. Management
70. Medical, Legal, Accounting Mgt.
OTHER PROFESSIONAL MANAGEMENT
80. Information Centers/Libraries, Educators, Journalists, Students
90. Other Titled Personnel

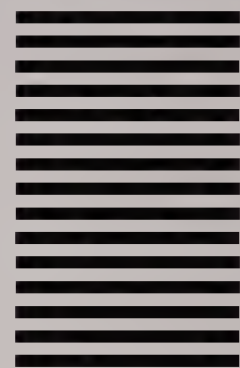
- 3.** Do you use, evaluate, specify, recommend, purchase: (Circle all that apply.)
Operating Systems
(a) Solaris (e) Mac OS
(b) Netware (f) Windows NT
(c) OS/2 (g) Windows
(d) Unix (h) NeXTstep
App. Development Products ☐ Yes ☐ No
Networking Products ☐ Yes ☐ No
Intranet Products ☐ Yes ☐ No
4. Which of the following products do you buy, specify, recommend or approve the purchase of? (Check all that apply.)
(a) ☐ Internet software
(b) ☐ Internet browsers
(c) ☐ Web authoring/development tools

COMPUTERWORLD

B4G7 W



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES



BUSINESS REPLY MAIL
FIRST-CLASS MAIL PERMIT NO. 55B MARION OH

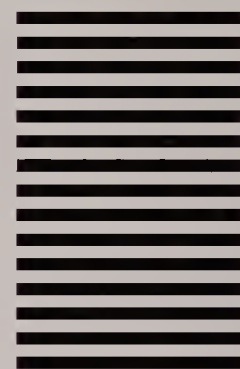
POSTAGE WILL BE PAID BY ADDRESSEE

COMPUTERWORLD

P O BOX 2044
MARION OHIO 43306-4144



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES



BUSINESS REPLY MAIL
FIRST-CLASS MAIL PERMIT NO. 55B MARION OH

POSTAGE WILL BE PAID BY ADDRESSEE

COMPUTERWORLD

P O BOX 2044
MARION OHIO 43306-4144





YEAR 2000 SCOREBOARD

An occasional series
on year 2000 trends,
issues and statistics

Offshore programmers: Low cost for long?

Don't count on offshore programmers to help you save as much money on year 2000 conversion work as you had hoped.

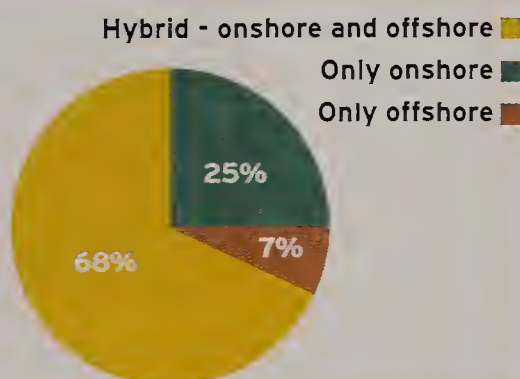
Costs are likely to increase because the offshore labor pool can't handle the demand, cautioned Howard Rubin, a software researcher and head of the computer science department at Hunter College in New York, in a presentation in May at DCI's Year 2000 Issues and Answers Conference in Boston sponsored by Digital Consulting, Inc.

Rubin said some of the most popular offshore targets — India, Canada and Ireland — don't have anywhere near the production capacity of the U.S. (Canada has the highest of the three at 9%, India has 5% and Ireland has 2%.)

Companies in India may charge less than their counterparts on the other side of the world, but their costs are rising, according to Satish Manchala, an executive at India-based information technology consultancy VJ Infosystems Ltd. Manchala says labor costs averaged less than \$20 per hour last year, but they have risen slightly to a range of \$15 to \$25. But that's still less than the going rate in the U.S., which, he adds, is \$55 to \$65 per hour.

Where outside the U.S. can you get the highest quality work for a reasonable price? Rubin says Canada "might be the best place to go" because salaries are lower than in the U.S., but software workers are more productive. — Rick Saia

In a study of 112 companies for Cap Gemini Group, software researcher Howard Rubin found that use of offshore resources is a major element of many corporate year 2000 strategies:



Memo to staff: Drop what you're doing

Many IS managers worry that they'll have to postpone critical application development so they can devote money and people to their year 2000 problems. That's already happening at Bernard C. Harris Publishing, Inc., a Norfolk, Va., publisher of alumni directories.

The company has decided to call "all hands on deck" to quickly analyze the extent of its year 2000 problem, says

project manager Janet Burns. "We could [have] put five people on it for five months or 20 people on it for two months," she says. Management opted for speed because the company still runs many older systems thought to be prone to year 2000 woes, and it isn't sure it can replace them by the end of 1999.

"If those projects didn't get going or weren't going to finish by 1999, we needed to figure out what we had to do now," Burns says. The year 2000 speedup has put virtually all new development on hold, she says, including the

final phase of a client/server system designed to improve customer service.

Why this urgency when the company hasn't found any actual year 2000 bugs? Because "we definitely feel that if you don't address this, you're betting your business," Burns says. And if the year 2000 problems aren't too bad, work on the customer service system could resume by next month. — Robert L. Scheier

Showing, not telling, makes case

Having trouble delivering the year 2000 message to executives? Don't just talk about the problem — show them.

At Wheeling Pittsburgh Steel Corp. in Wheeling, W. Va., upper-level executives had to be convinced that the year 2000 would have a big impact on the steel manufacturer.

Early last year, they got the message — and Wheeling, well into the conversion process, expects all its systems to be year 2000-compliant by the end of next year.

The vice president of information systems, Tom Notaro, wanted to see "real-life" examples of how systems would be affected, says Dan Busack, director of software development at Wheeling.

Using Cobol Analyst 2000, an impact-analysis tool from SEEC, Inc. in Pittsburgh, IS set up several demonstrations of how the company could be affected. When one demo showed the potential impact on shipping, Busack said, executives took notice. The purchasing system demo revealed that the company wouldn't be able to order parts for delivery starting in January 2000. "The system just

stopped," Busack says. "It wouldn't process those requirements." That, he adds, helped convince Notaro and line executives that they were facing a problem. — Rick Saia

Lessons from Leon

Looking for some ideas in implementing a year 2000 conversion plan? Leon Kappelman may have some for you in his new book: *Year 2000 Problem: Strategies and Solutions from the Fortune 100, or The Y2K Dragon-slayer's Manual*.

Kappelman, a professor of business computer information systems at the University of North Texas and co-chairman of the Society for Information Management's (SIM) International Year 2000 Working Group, has combined the works of more than 50 writers, authors, consultants and IS professionals to offer strategies, war stories, resources and more on the year 2000-conversion problem.

The book, published by International Thomson Computer Press (www.itcpmedia.com), is due on store shelves by Aug. 1, Kappelman says.



COMPUTERWORLD

This week on our
World Wide Web site
(www.computerworld.com).

Stephanie T. Moore, an analyst at Giga Information Group, advises IS managers about potential land mines to look out for in the year 2000 market.

Are you worried about total ownership costs? Don't place your faith *only* on changing technology.

Replacing old PCs with network computers or switching operating

systems is not the miraculous answer to the rising costs of computer networks. You'll save more money if you improve reliability and security and become a superb manager of the technology you have.

Until recently, we rarely heard much about the excessive cost of PCs, even though it can amount to as much as 40% of the salaries paid to PC users. Computer people kept quiet because they were preoccupied with obtaining money to buy hardware and software. Top managers only began to inquire about the full life-cycle cost of computing when they recognized that computer ownership increasingly includes costs that show up only in the users' operations.

Today, user-incurred costs such as "futzing" (wasting time on PCs), improvised learning, assistance from fellow employees and end-user attempts to become computer experts are showing up in the total ownership cost (TOC) estimates published by consultants and vendors.

DOWNTIME ESTIMATE

Still, something is missing. I have been bothered by the lack of any allowances in TOC calculations for the business consequences of network downtime [CW, Jan. 13]. Vendor claims and widely quoted consultant estimates don't include that. Yet, I have data that suggests that many networked PC users can't perform their essential business tasks for anywhere from two to four hours per month. Frequently, those disruptions can lower productivity and hurt revenue.

In business-critical applications, computer downtime equals the costs of idle labor. I recently completed a study of a network with 2,500 clients, 80 servers, 50 bridge/routers, 200 hubs and 160 printers.

The unplanned downtime for the clients was 1.6 hours per month per person. Throw in the interruptions caused by the servers, routers and hubs, and it added up to 2.8 hours. For the entire network, that was 84,000 hours of dysfunctional time per year. With user compensation averaging \$32,000 per year, plus benefits, that could add up to a big waste of resources.

TOTAL COST OF OWNERSHIP MODEL

In revenue-creating applications, the losses from computer downtime can be even greater. According to a model from Interpose Corp., revenue losses per employee can equal several times an employee's hourly compensation for

every hour of downtime.

Interpose in Altamonte Springs, Fla., (www.interpose.com) offers the most comprehensive software for estimating total ownership costs, including expenses that don't show up in the information technology budget. In addition to calculating hardware and software component costs, it also includes allowances for the following other IT expenses:

- Network management (such as troubleshooting and repair, performance tuning and user administration).
- Systems management (such as technology evaluation, licensing, asset management, network security and installation of upgrades).
- Storage management (such as storage capacity planning, backup and archiving, and disaster planning).
- User support (such as training, vendor liaison, equipment relocation, trouble diagnosis and help desk operations).

The model also includes losses in productivity attributable to end users as a cost of ownership, such as the following:

- Lost productivity and lost revenue from downtime. (The model estimates these losses from user-supplied data on such factors as salary, what portion of the person's time is critical, planned downtime, unplanned downtime, what portion of the population is affected and how mission-critical those people are.)
- Time spent in formal training.
- Cooperative training, when the user's peer interrupts work and offers tutoring.
- Casual training, such as learning from trial and error or by perusing a manual.
- The cost of correcting errors resulting from the inability to operate the system.
- The "futz factor" — the costs of users spending work hours using their PCs for entertainment and private purposes.

THE DOWNTIME EFFECT

I ran the Interpose model for the network under study to calculate the average cost per client station, including all the standard cost elements listed above.

The effects calculated by the model were remarkable: Fully 48% of the \$12,516 average cost per client could be attributed to the revenue lost by downtime. Other end-user inefficiencies would account for only 12% of the TOC. Futzing amounts to only 2.9% of the TOC.

Those results intrigued me. The key

influences on TOC weren't the standard cost elements, but network reliability. I wanted to assess the value of the work that wasn't done because of downtime.

To estimate that value, I related it to the salary: the higher a user's salary, the higher the potential impact on revenue loss. That way, I assumed that the higher the compensation, the more likely is that person's effect on business outcomes. Salary also will be a measure of lost productivity in case that person can't function because the essential computer support collapsed.

I also examined the total ownership costs for the identical network, assuming it supported highly paid users (earning \$90,000 a year).

The losses due to downtime were even higher. For highly paid analysts, using low-reliability networked PCs (where downtime was 3.2 hours per month), the average cost per client was \$29,100. In this example, the costs of hardware and software would amount only to 8% of TOC! If these analysts were currency traders, and totally dependent on workstation uptime to conduct business, the TOC would be much higher and the importance of hardware and software much lower.

CIO IMPLICATIONS

Making technical choices about operating systems (OS2 vs. Unix vs. NT vs. Windows 95), hardware (PC, NC or NetPC) or various administrative schema (such as the Zero Administration Cost initiative) does not predetermine the financial impacts on organizations.

It's not technology, but management effectiveness that drives the total cost to an enterprise of using networked computers. Management can exercise the greatest influence on how an organization overcomes the revenue impact when networks fail to

function. Only management can deliver reliability and responsiveness to customer needs. Identical servers supporting identical clients, using identical routers, hubs and printers, will show widely different TOCs depending on who uses them, the importance of the computers, how critical the applications are and the reliability of the networked services.

Top management is starting to ask questions about why overhead costs are up despite the introduction of supposedly inexpensive computer networks. This time around, it will not be prudent to offer yet another technological fix as the cure to bloated IT budgets and rising overhead costs. □

Paul Strassmann's (paul@strassmann.com) new book, *The Squandered Computer*, singles out excessive total ownership costs as the most attractive target for immediate cost reductions.

PAUL STRASSMANN



TO LOWER OWNER- SHIP COSTS, MANAGE THEM BETTER

Make your I.T. skills & training take off with this FREE tool

<http://careeragent.computerworld.com>

Use these FREE features at <http://careeragent.computerworld.com>

- Search for specific learning resources
- Describe your training and education interest areas
- Optionally receive email updates of new learning resources that meet your interest areas
- Describe your current or ideal I.T. position
- Assess your skills relative to the skills required for that position
- Calculate a personalized "skills gap" to compare your fit to that position
- Record work experience for use in skills assessment
- Define goals for later use in career planning

And if you're an I.T. manager concerned about staff retention, you'll want to check out the "about Careeragent" button also at <http://careeragent.computerworld.com>. Here you'll see how a corporate subscription to CareerAgent will help your entire staff assess learning styles and skills, calculate skill gaps, and search for training. As a manager, you can use CareerAgent's intelligent decision support system to calculate individual, group and department skill gaps.

The point? Every individual on your team has an idea of their career plan, and knitting these plans together can benefit corporate goals. Think about your current team today. Do individual career plans in your organization seamlessly benefit from available projects? Training resources? Corporate goals? Is this information connected to cost-effectively reskill and retain staff? It's all possible with CareerAgent, where management and staff can collaborate to continuously develop a career "itinerary" for each individual. On the Internet or your intranet. Your choice.

For details, see <http://careeragent.computerworld.com> or call 1-800-343-6474, x6000 today. And make every career on your team what it should be: a well-planned journey of enrichment.

Search Thousands of Course Listings From:

Learning Tree International
Wave Technologies
Hewlett-Packard Educational Services
Boston University Corporate Education Center
Interpersonal Technology Group
DPEC
Business Communication Review
American Research Group (ARG)
IKON
HOTT (Hands on Technology Transfer)
NIIT, Incorporated
The Center for Systems Management
New Horizons Computer Learning Center of Boston
Sybase/Powersoft Education
ESI International
The Seale Group, Inc.
Strategic Management Group, Inc.
CBT Systems
And more coming soon...

New From:

COMPUTERWORLD

**CAREER
AGENT**
careeragent.computerworld.com

Announcing the first desktop computer that's not a desktop computer.



© 1997 Hitachi PC Corporation (USA). All rights reserved. Hitachi VisionBook™ Pro and Mobilized Computing™ are trademarks of Hitachi PC Corporation (USA), which may be registered in some jurisdictions. The Intel Inside Logo & Pentium are registered trademarks and MMX is a trademark of Intel Corporation. All other marks are owned by their respective companies. **All x2 products are capable of 56Kbps downloads; however, due to FCC regulations which restrict power output, current download speeds are limited to 53Kbps. *Concurrent use of floppy and CD ROM drives requires use of external AC adapter. Model shown is 7560 and specs quoted apply to that model. Specifications and availability subject to change without notice.

Introducing
THE HITACHI VISIONBOOK PRO.
BUSINESS-SPEED MODEM, BUILT-IN LAN, HUGE SCREEN.

Once there were very good reasons to have one kind of computer for running your business and another kind for running around. But, with the introduction of the Hitachi VisionBook Pro™, those reasons abruptly disappear. Because of our unique technology, the gap between desktop PCs and notebook PCs is, in practical terms, totally obliterated. By every measure—screen clarity and viewing area, concurrent use of floppy and CD ROM drives*, the performance of Intel's Pentium® processor with MMX™ technology—you compromise nothing.

And the new Hitachi VisionBook Pro delivers integrated communication features previously known only to desktops with Fax/Modem and LAN.

You're ready to influence events from wherever you do business. The Hitachi VisionBook Pro. It will

give you your desk back. While eliminating your need for one.



I'll be working out of the office today.

SIGNIFICANT FEATURES

- U.S. Robotics® 56K** x2™ modem—fastest in a notebook.
- Integrated IOBase T LAN port.
- Hitachi super large 13.3" TFT display.
- XGA (1024 x 768) resolution.
- 166MHz Intel Pentium® processor with MMX™ technology.
- 512K L2 cache—twice standard size.
- Card Bus-compliant Type II/III PC card slots supporting Zoom Video.
- 32MB EDO RAM upgradeable to 144MB.
- 3.0GB removable hard drive.
- Smart Lithium-Ion battery, swaps with 3.5" floppy drive.
- 10x CD ROM drive, swaps with second battery.
- Optional advanced port replicator.
- Full-size keyboard, USB port.



Call 1-800-HITACHI
www.HitachiPC.com

Buyer's Guide

CUSTOMER SATISFACTION SURVEY:

IS managers want performance and quality, but they're tired of paying high prices for PCs and notebooks

mm

y brother-in-law works for a retail chain whose chaotic-looking stores are filled with clothes and household goods scavenged from other retailers'

overstocks and closeouts. The corporate motto is simple: "Good stuff cheap."

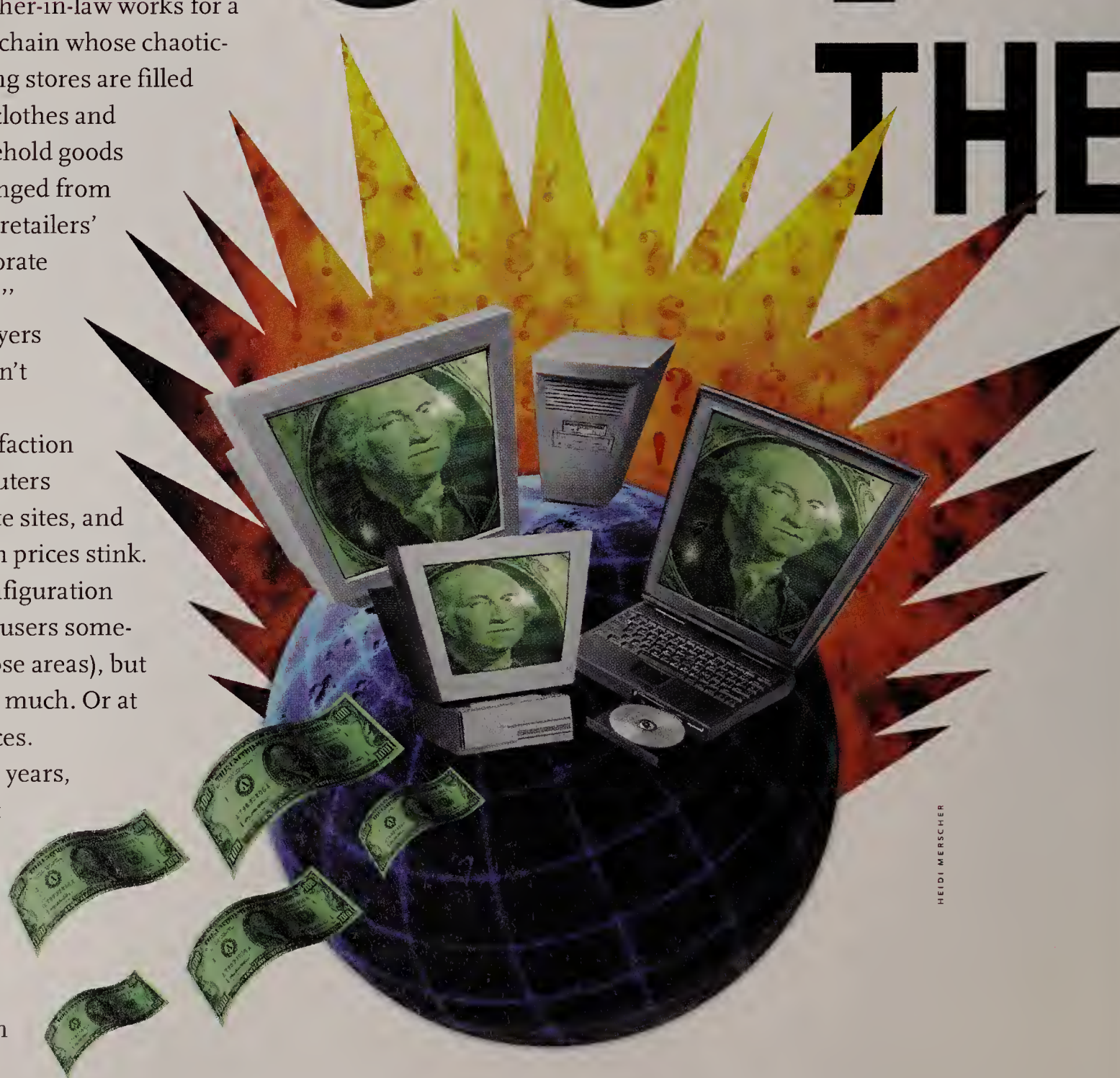
Funny, that's exactly what PC buyers want, too. And they say vendors aren't offering any.

Computerworld's Customer Satisfaction Survey on PCs and notebook computers drew responses from 1,651 corporate sites, and the respondents spoke plainly. High prices stink. Performance, reliability, ease of configuration and quality all score fine (PCs keep users somewhat happier than notebooks in those areas), but the industry at large is charging too much. Or at least offering too little for those prices.

One irony is that for the past two years, vendors have been preaching about how they are reducing the total cost of ownership. That may have been just blather. Users often rated cost of ownership lower than service and support, which buyers historically have slammed in other *Computerworld* surveys.

When we asked buyers what they most wanted from their vendors, the answer was clear: lower prices. Yet "cheap" isn't good enough. Buyers want "good stuff," too. In the following pages, you will see that vendors such as Hewlett-Packard, Dell and Micron Electronics — which blend good prices with good marks in

CUT THE



HEIDI MERSCHER

areas such as quality and reliability — score well in overall satisfaction. IBM, Toshiba America and Compaq, which also have good reputations for quality, performance and reliability, get dragged into the middle of the pack — or lower — because of user dissatisfaction with prices. — James M. Connolly, technology evaluations editor

DESKTOP SYSTEMS

- With prices so low, why the problem?

By Kevin Burden

tHEY'RE POWERFUL, highly reliable (making vendor support more negligible), there are plenty of vendors to bid for your business, and the cost — well, we can always beef about cost.

Frankly, cost is what users are focusing on these days, according to *Computerworld's* Customer Satisfaction Survey of 1,651 managers who purchase desktop systems.

score of 4.02 and reliability a mean score of 3.96. That shows users are generally happy with today's PC quality. And with a few exceptions, users are comfortable doing business with their vendors.

But moods changed when users were asked about price. System prices and overall cost of ownership received the lowest overall satisfaction grades of 12 categories, and it would have been worse if not for the relatively high scores for direct vendors such as Dell Computer Corp., Gateway 2000, Inc. and Micron Electronics, Inc.

Still, it's clear that users feel that most vendors can do better on price. In a market where it's difficult to see the differences from box to box, price gets the attention. "And people don't feel they're getting anything extra by paying higher prices to nondirect vendors like IBM and Compaq [Computer Corp.]," says Laurie McCabe, an analyst at Summit Strategies, Inc. in Boston. "System reliability is such that users don't see much value in paying premiums for superior support."

But whether they sell direct or through reseller channels, all vendors have managed to maintain pricing levels even though raw power keeps getting less expensive. And that is why users complain about PC prices, Dunkle says.

Price per MIPS is dropping, but vendors consistently add to the systems' subcomponent level to maintain a higher price value. "With more memory, more storage, better monitors, video RAM, etc., PCs won't get cheaper as long as vendors continue to build up their baseline systems," Dunkle says.

More PC for the same money doesn't necessarily seem bad, but consistently increasing the standard configuration is why desktops are fully amortized in just 2.2 years, according to Dunkle's research. "Users want protection from price erosion," he says.

Bruce Broll, information systems supervisor at Altec Industries, Inc. in St. Joseph, Mo., says just buying the right

system for the job is the best insulation he's found against depreciation. "We still have some 486s running all the software those people will ever need. Buying top of the line to prolong system life doesn't work for us since it means we're probably buying more system than we need, and time will eventually catch up," he says.

The most obvious strategy is to get the best price you can, which may mean buying direct. But if you're hesitant about moving away from vendors you've considered to be business partners, look at the overall satisfaction scores, and see which vendors best satisfy corporate users. They are Dell, Hewlett-Packard Co., Gateway and Micron. Three sell direct — HP doesn't — and can often bid at least 10% below vendors such as IBM and Compaq.

MORE RELIABLE

Greg Martin, director of IS at Arnot Ogden Medical Center in Elmira, N.Y., who once exclusively bought from Compaq because of its reputation for reliability, says he is less concerned with reliability than in the past. "We haven't seen much of a difference since we started experimenting with Dell and Acer [America Corp.]. My focus now is which vendor can give me the best price break."

As for paying premium prices to get better service, Martin says it's not worth it for him. "We're using vendor service much less, given what reliability is today. That's why it's getting harder for Compaq and IBM to differentiate themselves to us," he says.

Support grades show that users don't necessarily sacrifice service by choosing direct-sales vendors. HP's grades are extremely strong, as their history shows, but the next best are Dell's and Gateway's. "This is probably the industry's best-kept secret," Dunkle says. "All our research says the abilities of their technicians to do remote diagnostics is out-

Desktop systems, page 68

COST

Users were asked to rate their satisfaction with their desktop systems and vendors in various categories pertaining to equipment quality, vendor image and cost issues.

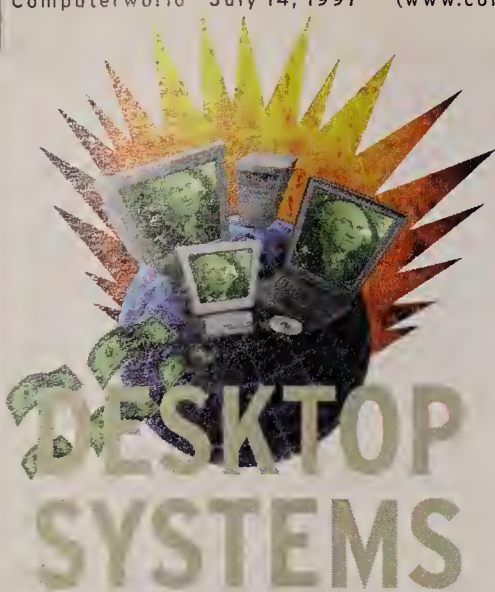
Overall, users gave decent grades in most categories. For example, on a scale of 1 to 5, where 5 is "completely satisfied," users gave performance a mean

But users did offer respectable grades on one money issue: value for the dollar. The industry as a whole scored a 3.74 rating, so users apparently don't feel they're getting ripped off. That may be because, given the performance of PCs, prices have never been lower, says John Dunkle, an analyst at Workgroup Strategic Services, Inc. in Portsmouth, N.H.

BUYERS RATE THEIR PC VENDORS

	Response base	T E C H N O L O G Y			C O S T S	
		Performance	Reliability	Configuration	Quality	Service and support
Acer	32	3.97	3.87	3.80	3.74	3.52
Apple	173	4.04	3.99	4.34	4.05	3.70
AST	55	3.77	3.85	3.70	3.81	3.54
Compaq	598	4.02	3.99	3.75	3.92	3.61
Dell	402	4.15	4.08	3.99	4.01	3.77
Digital	80	3.92	3.89	3.66	3.92	3.58
Gateway	329	4.07	3.93	3.94	4.00	3.66
HP	217	4.18	4.13	3.94	4.03	3.83
IBM	356	3.85	3.90	3.66	3.80	3.62
Micron	81	4.17	3.97	4.01	4.00	3.60
Total/mean	2,765	4.02	3.96	3.88	3.94	3.67

Based on a scale of 1 to 5, where 1 is "not at all satisfied," and 5 is "completely satisfied." High grade in each category is denoted with a . Ratings can't be projected to the installed base at large.



CONTINUED FROM PAGE 67

standing." Because all vendors received higher user satisfaction grades for their own support compared with what is offered through the vendor's channels,

users really aren't giving up much by going direct. "I don't need anyone to show up, just someone on the other end of the line that can take care of me. And that's what I have with Gateway," Broll says.

Probably the best evidence that price is fast becoming everything is a question in the survey that asked which vendor the user would prefer if price wasn't a factor. The top two in order: Compaq and IBM.

Although neither scored best in any category, they still would be the favorites if they didn't cost so much. "That makes total sense," Dunkle says. "There is a degree of safety when you buy from these vendors. Safety that comes at a price people like to complain about, but a level of safety people prefer." □

Burden is Computerworld's senior researcher, Buyer's Guide.

PC VENDORS AT A GLANCE

Respondents rated their satisfaction with various aspects of their desktop and notebook vendors on a scale of 1 to 5, where 1 is "not at all satisfied," and 5 is "completely satisfied." Ratings reflect only the views of the survey respondents and can't be projected to the installed base at large. Standard error of the means when it is factored in can affect the vendor order. Vendors are listed from highest to lowest customer satisfaction.

Hewlett-Packard – HP not only scored one of the highest grades for overall satisfaction, but it also scored highest in six out of 10 categories.

Dell – Tied HP for the top spot in overall satisfaction.

Gateway – Gateway ranks higher on price and value than other vendors such as Dell and Micron, which

notoriously compete on value.

Micron – Very strong in performance and has a technical direction its users favor.

Compaq – Users are comfortable dealing with Compaq as a vendor but didn't gush with satisfaction when grading their systems.

Apple – Mostly mediocre grades, but it excels and scores the highest in ease of configuration and quality.

Digital – Received grades that were down the middle in nearly every category.

Acer – Very few Acer users responded to the survey and didn't award any grades to brag about, either.

IBM – Scored lowest for price and value and came close to having the worst overall satisfaction grade of the survey.

AST – The lowest overall satisfaction of the survey.

THE REST OF THE FIELD

There is another group of PC vendors tiered differently in this survey because of their relatively low response bases. Some are on their way up in the market, such as Micron Electronics. Others may be on their way down or just floundering, such as AST Research, Inc. and Acer. And still others survive through a loyal following, including Apple and Digital Equipment Corp.

Apple was the only vendor in this second tier with more than 100 users responding to the survey. Apple has always been a different breed; though it never seems to fit in a Windows-based PC comparison, the high satisfaction of its users can't be ignored.

Apple actually scores among the highest grades of the survey in the technology categories, especially for ease of configuration and quality. But when it comes to cost, Apple users complain louder than other PC users.

Micron's reputation for driving

performance at great prices built it a brand equity that people associated with superpower users, according to John Dunkle, an analyst at Workgroup Strategic Services.

"Now that people understand Micron is available at a fair price, it's been doing very well," he says.

Micron's price scores are right in line with price-conscious Dell, but with an edge in performance.

Acer's overall satisfaction is below the survey mean. But even

worse, there is a sizable gap between its price satisfaction, which is among the highest, and its value-for-the-dollar score. "We call this 'after-sale satisfaction' and with Acer, it's not good," Dunkle says.

AST scored the lowest overall satisfaction of this small group of vendors and of the total survey.

"They have way too many strikes against them. It's very unlikely they'll get any momentum back," says Laurie McCabe, an analyst at Summit Strategies. — Kevin Burden

BUYERS RATE THEIR PC VENDORS

	C O S T S			I M A G E			
	Price	Value	Cost of ownership	Vendor reputation	Technical direction	Comfort with vendor	Overall satisfaction
Acer	3.80	3.67	3.63	3.73	3.77	3.62	3.69
Apple	3.37	3.63	3.66	3.85	3.52	3.67	3.73
AST	3.77	3.70	3.67	3.67	3.60	3.67	3.64
Compaq	3.40	3.52	3.47	4.13	3.99	3.96	3.82
Dell	3.90	3.94	3.84	4.12	4.05	4.04	3.98
Digital	3.19	3.45	3.36	3.93	3.84	3.79	3.71
Gateway	4.07	4.06	3.95	4.03	3.94	3.96	3.93
HP	3.60	3.81	3.74	4.29	4.13	4.14	3.98
IBM	3.16	3.29	3.28	3.99	3.75	3.73	3.67
Micron	3.89	3.87	3.78	4.14	4.10	4.03	3.88
Mean	3.66	3.74	3.67	4.00	3.89	3.89	3.84

Based on a scale of 1 to 5, where 1 is "not at all satisfied," and 5 is "completely satisfied." High grade in each category is denoted with a . Ratings can't be projected to the installed base at large.

Yes, tell me how IntelliStation can help me do what I do best.

Name.....
Title or Position.....
Company Name.....
Address.....
City.....State.....Zip.....
Phone Number.....E-mail Address.....

Nature of business:

- ☐ Advertising/Marketing
☐ Digital Content Creation/Visual Media
☐ Electrical Engineering/Design
☐ Financial Services
☐ Mechanical Engineering/Design
☐ Software Engineering/Design
☐ Other.....

No. of workstations in your company:

- ☐ 1-10 ☐ 11-50 ☐ 51-100
☐ 101-500 ☐ 500+

No. of workstations you intend to purchase
in the next 12 mos.:

- ☐ 1-10 ☐ 11-50 ☐ 51-100
☐ 101-200 ☐ 201-500 ☐ 500+

Hardware used:

- ☐ IBM ☐ HP ☐ SUN ☐ SGI
☐ Compaq ☐ Mac ☐ Digital ☐ Other.....

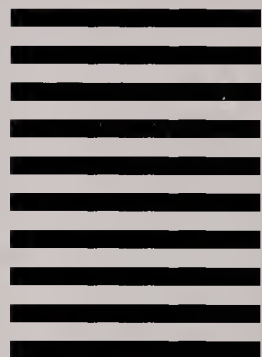
Operating System:

- ☐ Mac ☐ Windows 95
☐ UNIX ☐ Windows NT ☐ Other.....

MW03



NO POSTAGE
NECESSARY IF
MAILED IN THE
UNITED STATES



BUSINESS REPLY MAIL

FIRST-CLASS MAIL PERMIT NO. 56 HOLLISTON, MA

POSTAGE WILL BE PAID BY ADDRESSEE



PO Box 6100
Holliston MA 01746-9814



the “give me a high-performance workstation that I can manage just like my PCs” solution



Introducing the **IBM IntelliStation**. A powerful graphics workstation and PC all in one.

Imagine, a high-end workstation that can be easily integrated into your existing Windows NT® or mixed environment. That's the IBM IntelliStation™. With industry-leading manageability features including IBM's Wake on LAN™, you can easily install and upgrade software and provide support over the LAN from one central location. Saving time and money. IntelliStation gives your users both top-of-the-line graphics and PC functionality. With Windows NT versions of



Winner
Best Workstation
IBM IntelliStation M Pro

the industry's most advanced applications, users can execute 2D and 3D technical graphics. And simultaneously on the same screen, they can write letters, send e-mail and access the Internet, sharing ideas over your LAN, throughout the world. With your choice of Intel® 266MHz Pentium® II or up to two 200MHz Pentium Pro processors and up to 1GB of memory, they'll have all the power they need. **IBM IntelliStation**. Nothing gets in the way of a good idea.

To find out how the IBM IntelliStation can work for you call 1 800 426-7255 ext. 5140.

Or visit our Web site at www.us.pc.ibm.com/intellistation/info.



Solutions for a small planet.

Improve your performance with: Single 266MHz Pentium II processor or single 200MHz Pentium Pro processor, upgradable to dual Pentium Pro processors. Up to 1GB of maximum memory. 16X max (variable speed) CD-ROM drive. 2D Matrox Millennium graphics card or Intergraph Intense3D Graphics Pro 1000/T card.



MICROSOFT
WINDOWS NT
COMPATIBLE

MHz denotes internal clock speed of the microprocessor units; other factors also affect application performance. IBM, IntelliStation, Wake on LAN and Solutions for a small planet are trademarks or registered trademarks of International Business Machines Corporation. The Intel Inside logo and Pentium are trademarks or registered trademarks of Intel Corp. Microsoft, Windows NT and the Windows NT logo are trademarks or registered trademarks of Microsoft Corporation. Other company, product and service names may be trademarks or service marks of others. PCs referenced in this ad ship with an Operating System. © 1997 IBM Corp.



Now
Web Enabled

SAS

Institute.

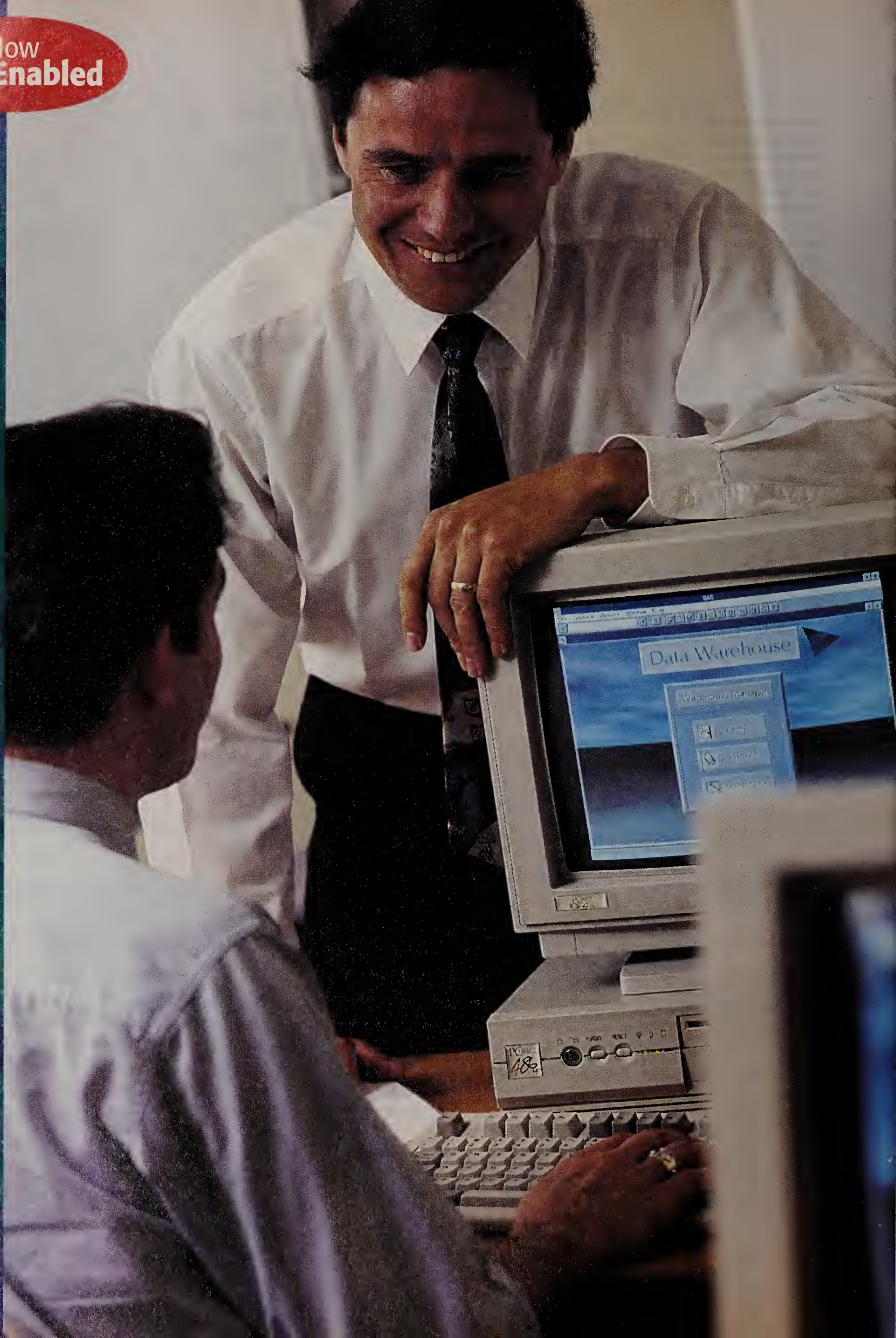
Software

for

Successful

Decision

Making.



FREE for a Limited Time...A CD ROM Preview of

The Top New Data Warehousing Software

*When 200,000 IS managers were asked to
choose the top software for data warehousing,
their answer had a familiar ring:*

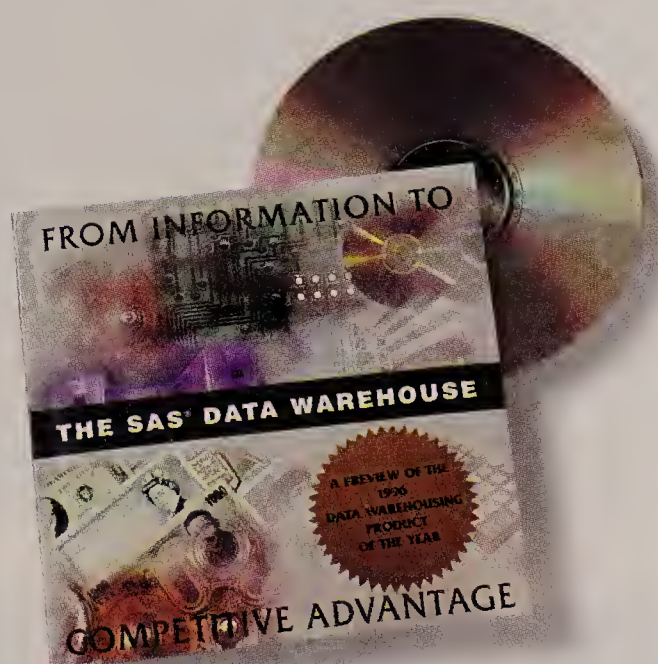
SAS® software from SAS Institute.



As the only end-to-end solution for rapid data warehousing, SAS software delivers everything you need to manage, organize, and exploit your business data. The tools you use

to build a data warehouse are the same ones used to maintain it... run it...and change it. And what's more, everything's scalable. Jump right into enterprise-wide information delivery applications...or start small and build on your success.

SAS software doesn't consume overhead for database features you don't need. And once you have data in the warehouse, you'll find everything you need for data query and reporting, OLAP/multi-dimensional analysis, data mining, database marketing, data visualization, and much more. It's never been easier to access your data...or to arrive at informed decisions by turning raw data into real information.



SAS Institute

Software for Successful Decision Making

Phone 919.677.8200 Fax 919.677.4444
In Canada 1.800.363.8397

You can also request your free CD ROM, and learn more about SAS seminars in your area, by visiting us on the World Wide Web at <http://www.sas.com/>

E-mail: cw@sas.com



NOTEBOOK COMPUTERS

Ferraris and diamonds on tuna casserole budgets?

By Cathleen Gagne

W E ALL WANT the best — and there are certain things for which we expect to pay top dollar. Then there are certain prices that people just can't come to grips with. Take notebook computers: People want portables to do it all, but it galls them to shell out the bucks.

Computerworld cast a mail survey to 4,000 information systems sites and received 1,651 responses. The responses voiced a clear, collective cry from users demanding that vendors cut their costs. And users aren't going to settle for less support and poor quality just to get those cut-rate prices; they expect their notebooks to work and that vendors will stand by their products.

MORE SATISFACTION

The results show that users overall were most satisfied with Hewlett-Packard Co., Dell Computer Corp. and Micron Electronics, Inc. They were the least pleased with AST Research, Inc., NEC Computer Systems and Compaq Computer Corp. Companies that fell in the middle include Gateway 2000, Inc., Toshiba America Information Systems, Inc., Apple Computer, Inc. and IBM.

Dell and Micron, both telephone-order vendors, scored the highest in price, value and cost of ownership, and HP scored big on vendor image issues and service

and support. NEC and AST didn't fare well in any category. Compaq scored steadily in many categories but sank in price, value, hardware quality and reliability.

Analysts acknowledge that part of the user dissatisfaction may simply be that notebooks are so much more expensive than desktop machines that offer the same performance.

"Considering that we're paying about twice what we could pay for a desktop, this is frustrating," says Jon Penot, IT/IS manager at Health Plan Southeast in Tallahassee, Fla.

Analysts also say notebooks today cost less than ever. So complaining users don't appear to get a lot of sympathy.

"I don't know what users are expecting. I would say notebook [prices] are at an all-time low for what you get," says Ken Dulaney, vice president of mobile computing at Gartner Group, Inc. in San Jose, Calif.

Prices may not come down for a while, either, analysts project. "For vendors to drop the price, it's really a big problem because there are more things that have to go into the notebook," says Rob Enderle, area director at Giga Information

Group in San Jose. For example, the desktop machine is sold without a display, and it is integrated with the notebook. "You can get pretty sloppy with the implementation of the desktop system, and it'll still look and work all right. With a notebook, if you get sloppy, you've got heat problems and service problems, and it all goes back into cost," he says.

When we tried to pin down several survey participants on exactly what bothered them about notebook price and value, they registered vague responses or drifted in other directions to plead for better support or quality assurance from vendors. It appeared that the problem may not be the price, but what you get for that price.

For example, Carin Barbanel, a senior desktop publisher at Ambac Indemnity Corp. in New York, says the price of her company's Compaq machines would be worth it if the vendor would "give us insurance that the case will not crack and replace it for a year or two years if it does ... and offer user manuals." She also found Compaq to be inflexible when it came down to negotiation. "I would have expected them to throw in more service," she says.

USER FEAR

Although the survey shouts of user unhappiness with price, users also are afraid of getting burned by buying less-expensive machines.

"You definitely get what you pay for," says Penot of lower-priced notebooks. Health Plan Southeast buys from Gateway primarily because of its competitive prices, he says. But he acknowledges that this short-term tack has backfired on him in the long haul. "When we've called because a battery pack has completely died and won't recharge, Gateway's answer is typically, 'We don't make these anymore.

NOTEBOOK VENDORS AT A GLANCE

Vendors are listed from highest to lowest customer satisfaction.

Hewlett-Packard — Not a market leader, but this vendor manages to grab the highest marks in many categories.

Dell — Our survey indicates that this vendor is used by more users in value-priced and midrange categories.

Micron — This lesser-known vendor scores the highest marks in most of the technical categories.

Gateway — Steady marks throughout the survey puts it in fourth place overall.

Toshiba — Survey indicates support problems; analysts say it's had a checkered history in that area.

Apple — Areas of most concern to Apple users are price, value and comfort with vendor.

IBM — Company is getting stomped on price, value and cost of ownership.

Compaq — This vendor placed third from last in hardware quality, reliability and ruggedness. It also placed second from last for screen quality.

NEC — Users are most troubled by performance, reliability, hardware quality, vendor reputation, technical direction and the cost of ownership.

AST — Scored flat-out last in almost every category, except pricing areas.

BUYERS RATE THEIR NOTEBOOK VENDORS

T E C H N O L O G Y

	Response base	Performance	Reliability	Ruggedness	Screen quality	Hardware quality	Service and support
Apple	130	3.79	3.84	3.84	3.84	3.85	3.67
AST	70	3.53	3.33	3.36	3.47	3.44	3.25
Compaq	369	3.77	3.71	3.64	3.69	3.69	3.58
Dell	261	4.03	3.97	3.97	3.96	3.92	3.81
Gateway	125	3.82	3.74	3.68	3.77	3.71	3.65
HP	52	4.02	3.90	3.83	4.00	4.00	3.96
IBM	428	3.83	3.82	3.72	3.86	3.78	3.65
Micron	43	4.17	3.95	4.00	4.17	4.08	3.72
NEC	86	3.73	3.66	3.62	3.88	3.65	3.49
Toshiba	485	3.88	3.77	3.73	3.87	3.81	3.48
Total/mean	2,256	3.84	3.76	3.71	3.82	3.77	3.59

Based on a scale of 1 to 5, where 1 is "not at all satisfied," and 5 is "completely satisfied." High grade in each category is denoted with a . Ratings can't be projected to the installed base at large.

You have to buy a whole new computer.” He says this translates into a value issue because “they aren’t supporting what they originally sold you.”

Penot says his company also uses IBM notebooks, which he prefers over the Gateway line. But he has a major gripe with IBM on price. “We’re spending about \$4,000 per laptop but can get the same thing from Dell or Gateway for \$2,900. But IBM’s trade-off is better support,” he says.

Penot says he’s now fighting for more IBMs, using the argument that “we can throw away a machine after six months if it breaks or we can pay more and get repair service/support with IBM. In the long run, IBM is a better value.”

But based on the survey numbers, Penot may be in a minority. The scores from IBM’s 428 users placed it last in price, value and cost of ownership categories.

IBM users are clearly unhappy with the price. Conversely, when our survey asked all the respondents, “If price weren’t a factor, what vendor would you choose?” they put IBM in the top spot.

“Does everyone want notebooks to cost \$500? Sure,” Dulaney says. He also notes that people tend to purchase more than they need in a notebook.

He says IS departments may be buying high-end machines so everyone can get every possible feature and to hedge against being left behind on future enhancements. “But in fact, those machines are not going to pay out the way IS thinks they are. High-end machines have things like MPEG, which is still undefined and has not been useful, and zoom video and other technologies that I consider immature,” Dulaney says.

He suggests IS managers reexamine their clients’ usage patterns and tailor their machines more closely to what they really need to save money. □

Gagne is Computerworld’s senior editor, Buyer’s Guide.

OTHER SURVEY HIGHLIGHTS

SERVICE AND SUPPORT

Given that Hewlett-Packard, Dell and Micron placed highest in overall user satisfaction, it’s no surprise they grabbed the highest marks in service and support. The three also placed first in overall satisfaction, so it seems fitting that they would support their customers well.

But take note that three out of the four vendors that ranked highest in overall customer satisfaction are phone-order vendors — Dell, Micron and Gateway. One analyst thinks there’s a connection.

“Why they’re doing well has to do with customer support,” according to Ken Dulaney, vice president of mobile computing at Gartner Group. Dell, Micron and Gateway’s motto is to sell direct, so they don’t have as much overhead and can put much more into customer service, he says.

Placing middle to last in service and support are AST, Toshiba, NEC, Compaq and IBM.

Dulaney says users may be indicating less satisfaction with some vendors because they’re dealing through resellers, which can cloud the perception of a vendor.

“For example, I consider IBM to have excellent support, but what you may be seeing is the support ratings of the third parties,” Dulaney says.

Toshiba, which has a large market presence, has had serious support problems, particularly with its 500 series, analysts say. “Because they are the largest in marketshare . . . they had severe shortages in parts,” says Rob Enderle, area

director at Giga Information Group.

TECHNOLOGY

Micron, HP and Dell again posted top scores in areas of performance, hardware quality, reliability and screen quality. Apple knocked HP out of third place for ruggedness and system compatibility, with Micron and Dell took first and second place, respectively.

“Micron has always performed flawlessly in terms of product in my experience,” Enderle says.

Falling in the last two spots in almost every technology category were AST and NEC, which also had relatively few responses. Compaq and Gateway scored poorly, just ahead of AST and NEC throughout those areas.

“We’ve put Compaq on problem watch at Gartner,” Dulaney says. They’ve tracked problems in overall hardware quality and overall reliability of their systems.

VENDOR IMAGE

The low scorers in categories such as vendor reputation, technical direction, credibility and comfort with vendor were AST, NEC and Apple.

“NEC has a communication problem,” Enderle says. “Their boxes have been reasonably robust, but we are talking about a vendor that has never really been able to communicate well with the domestic base here. They have just not done a good job creating a comfort level.”

Apple’s low scores may be because of “management changes, technology snafus and the inability to move the Mac,” says Mike McGuire, senior analyst of mobile computing at Dataquest in San Jose, Calif.

And just take a guess who scored highest in all the vendor image categories. Yup, you got it: HP, Micron and Dell, the companies that scored so well throughout the entire survey.

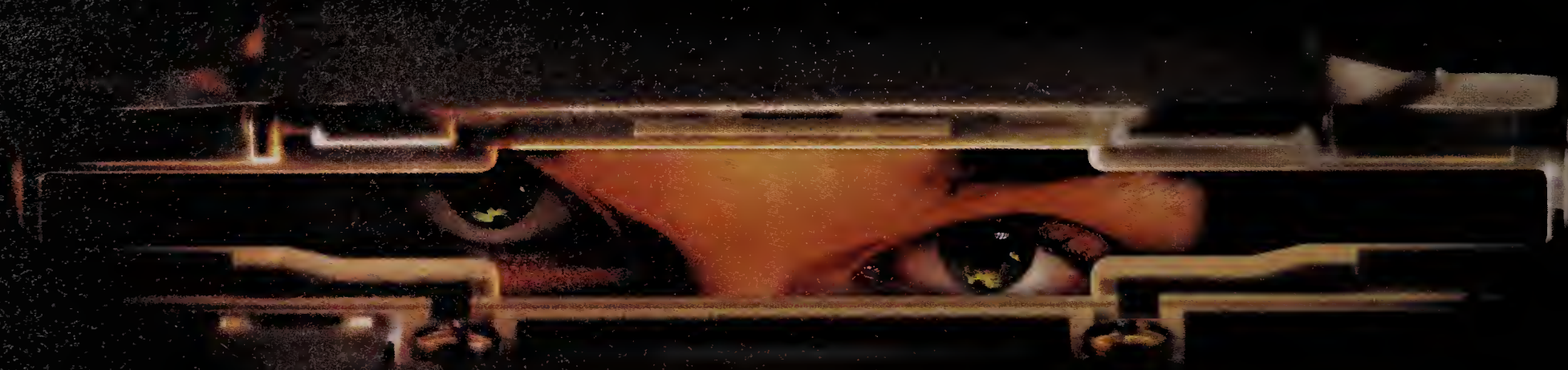
— Cathleen Gagne

BUYERS RATE THEIR NOTEBOOK VENDORS

	C O S T S			I M A G E			Overall satisfaction
	Price	Value	Cost of ownership	Vendor reputation	Technical direction	Comfort	
Apple	3.07	3.30	3.40	3.83	3.61	3.61	3.72
AST	3.42	3.44	3.34	3.36	3.28	3.33	3.32
Compaq	3.27	3.35	3.35	3.99	3.88	3.84	3.66
Dell	3.66	3.75	3.73	4.10	4.03	4.00	3.95
Gateway	3.75	3.69	3.65	3.89	3.90	3.87	3.77
HP	3.67	3.73	3.70	4.27	4.08	4.11	3.96
IBM	2.94	3.17	3.17	4.00	3.88	3.81	3.69
Micron	3.62	3.73	3.71	4.05	4.11	4.03	3.92
NEC	3.31	3.35	3.31	3.81	3.57	3.69	3.49
Toshiba	3.47	3.53	3.48	3.94	3.84	3.80	3.73
Mean	3.36	3.45	3.43	3.92	3.82	3.78	3.70

**Looks like a floppy drive.
Feels like a floppy drive.
Works like a floppy drive.**

(A 120 megabyte floppy drive.)



LS-120 technology.

The first high capacity storage system compatible with 3.5" diskettes.

Take a good look at the next PC you buy and make sure its floppy drive has the LS-120 Advantage: hassle-free, high-capacity storage. Only the LS-120 drive can give you 120 MB of floppy capacity, higher performance, and the ability to read and write to the 1.44MB and 720K floppies you use all the time.



LS-120 is the same simple floppy you already know how to use—just faster and roomier—and backed by a consortium of global technology leaders. It's the new standard. No matter how you look at it. Find out more at www.LS120.com. Or call us at 1-800-888-1889, ext. 4002.



COMPAQ

EXABYTE

O.R. TECHNOLOGY

IMATION
Borne of 3M Innovation

maxell

MITSUBISHI

Panasonic

**SIEMENS
NIXDORF**

Pyramid logo is a trademark of Imation. All other trademarks are properties of their respective companies. © Imation 1997.

In Depth

Lies, damn lies

and the Internet

These days, everybody's an instant publisher. And much of what's published is slanted, malicious or downright libelous. What are people saying about YOUR company in cyberspace? **BY STEVE ULFELDER**

At 2:00 a.m. on the day after Thanksgiving 1995, Ed Goldgehn of Marietta, Ga., went out to his driveway just in time to watch his Ford Ranger pickup burn to a twisted shell.

In the weeks that followed, Goldgehn and his wife, Debra, came to believe they'd been misled by Ford Motor Co. about the safety of the Ranger's ignition switch, especially when the company recalled Canadian vehicles after similar fires.

The Goldgehns didn't get mad. They got a Web site.

It's www.flamingfords.com, and a lot of people say it spurred a recall of 8.7 million cars and trucks in the U.S. that will cost Ford \$200 million to \$300 million, according to dealership figures.

Pundits say the beauty of the Internet is that anyone can be an instant publisher. The downside is that anyone can run a smear campaign full of libelous information that reaches millions of people in seconds. There are no editors or safeguards to ensure that 'net information is fair and factual.

The misinformation, disinformation and rumors posted daily on Internet Usenet groups and World Wide Web pages cost corporations money. A company can spend millions of dollars trying to repair its reputation in court, for example. Everywhere you look in cyberspace, disgruntled consumers, interest groups and competitors are bad-mouthing some company. Sears, Roebuck and Co., General Electric Co., AT&T Corp., MCI Communications Corp., Kmart Corp. and Wal-Mart Stores, Inc. have all been hit. Companies that fail to monitor Internet traffic may be headed for a public-relations disaster (see story, page 77).

Internet misinformation takes many forms: reckless Usenet flames, rogue Web sites and parodies, outright fraud and, of course, urban legends, the rumors that refuse to die. Urban legends existed long before the Internet, as anybody who ever sat around a campfire bull session can attest. But there are tens of millions of people around this particular fire, and too many of them are as gullible as a kid at camp.

Tommy Hilfiger Corp. was burned recently. The publicly traded clothing manufacturer, which reported \$662 million in revenue for fiscal 1997, was the victim of an Internet fable that spread like wildfire. The way the rumor went, designer Hilfiger appeared on *The Oprah Winfrey Show* and made racist comments about several groups, after which he was tossed off the set by Winfrey. (As all urban legends do, this one mutated; as it circled the globe, Hilfiger's comments were alleged to have been made on several other television shows.)

The rumor dates to at least late last year, but once it hit Usenet this spring, it took off. It appeared in many newsgroups, including alt.rap, rec.music.hip-hop and soc.culture.filipino, usually accompanied by a call to boycott the designer.

Lies, damn lies and the Internet, Page 77



INTERNET COMMERCE EXPO

INTERNET COMMERCE • INTRANETS • EXTRANETS

Los Angeles

September 8-11, 1997

Los Angeles Convention Center

Because it's not business as usual any more.

Your future is tied to doing business on the Internet and the World Wide Web. Internet Commerce, Extranets and corporate Intranets have changed the world of business as we know it. Whether you're a vendor with an Internet solution for the Enterprise... or a corporate decision maker looking for productivity enhancing products, you need to be at ICE.

For Exhibitors: a proven to deliver event.

Thousands of corporate buyers will be there looking for the new products and services that make Intranets, Extranets and Internet commerce practical and secure.

For Attendees: the coolest way to find the hottest Internet solutions.

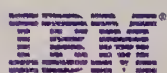
Leading Internet vendors and solution providers will show you how to increase productivity and profitability using the latest Internet technology.

Join your peers at this business-critical Expo and Conference.



An International Data Group Company

Sponsored by:



Microsoft



OPEN MARKET

Deloitte & Touche Consulting Group

COMMERCE

ORACLE



NETSCAPE

UNISYS

DEMO



VIRTUAL RESOURCES

Sponsoring publication:

COMPUTERWORLD
The Newsweekly for Information Technology Leaders

www.idg.com/ice

ICE, Internet Commerce Expo, and Internet Solutions for the Enterprise are service marks of International Data Group.

Please put me on ICE! I would like more information on: ☐ Exhibiting ☐ Attending

CW

Name _____

Title _____

Company _____

Address _____

City/State/Zip _____

Phone _____ Fax _____

e-Mail _____

111 Speen Street, P.O. Box 9107, Framingham, MA 01701.

Phone: 800-667-4ICE (4423) Fax: 508-370-4325

Lies, damn lies

and the Internet

CONTINUED FROM PAGE 75

The rumor was utterly false. Hilfiger has never appeared on or taped an episode of Winfrey's show. But the legend spread so rapidly and generated so much controversy among customers and potential customers that New York-based Hilfiger was compelled to respond on the 'net.

The company isn't alone. McDonald's Corp. in Oak Brook, Ill., just won a U.K. libel case after spending an estimated \$16 million fighting it over a seven-year period. In a series of pamphlets, two vegetarians accused the fast-food company of everything from eradication of the world's jungles to abuse of teen-age employees.

The pamphleteering began before the rise of the Web, but the Internet was a major factor in the dissemination of the material. An organization called McSpotlight has a slick site (with mirror sites on several continents) that calls itself "The biggest, loudest, most read Anti-McDonald's extravaganza the world has ever seen."

The day after McDonald's prevailed in court, McSpotlight used its site (www.mcspotlight.org) to mock the verdict and call the anti-McDonald's campaign "unstoppable."

For its expensive, lengthy effort (including 313 days of testimony), McDonald's was awarded the equivalent of \$94,000.

In the McDonald's and Hilfiger cases, the information on the Web was nearly all demonstrably false (the British judge did hold a few of the anti-McDonald's charges to be true). The case of the flaming Fords provides a more complex example, in which spin and gray areas come into play.

Early last year, the Goldgehns created the Association of Flaming Ford Owners, whose major draw was and is the Web site. "I don't consider it a Ford slam site," Ed Goldgehn says. But the home page features a picture of his burned-out truck against a background of fireballs. And although 8.7 million Fords eventually were recalled, the home page headline screams, "What caused this truck to burst into flames could happen to any of 26 million other Ford vehicles in the U.S. and Canada!"

Here grassroots activism, misinformation and old-fashioned spin-doctoring blur and shift. Ford's recall must be read as an admission of a problem. And flamingfords.com has been credited by *The New York Times* and CNN as a catalyst for the recall. Moreover, as Ed Goldgehn points out, the page includes nonpejorative resources such as press releases, lists of Ford dealerships and a description of the malfunction.

But the headline overstates the number of recalled vehicles by almost 300%. It tells Ford owners that if they park in a garage, they are "endangering your life and the life of your family." And it includes information on class-action lawsuits.

For its part, Ford hasn't gone online to combat flamingfords.com. "Anything we'd do on our own site would validate what these people are saying," says Ford spokeswoman Joy Wolfe in Dearborn, Mich. She says Internet expressions of customer dissatisfaction are "no different than people writing letters to the editor or painting lemons on their car and driving it around the dealership."

But many public relations experts disagree with Ford and Wolfe. Vehemently.

Unity Stoakes is one of them. "To not respond on the 'net is incompetent," says Stoakes, who is an Internet communications specialist at Middleberg Interactive, the Internet and new-media division of New York public relations firm Middleberg & Associates. "It may border on negligence."

Stoakes and others say Ford and most other large corporations — long adept at protecting their image in traditional media — haven't adapted to Internet communication. "The 'net is vastly different," says Michael Velasco, a communications consultant at Chicago-based New Millennium Consulting Group. "It's much higher speed. It's two-way."

Stoakes says, "When a customer types 'Ford' [in a search engine], they get this flaming Ford site. We would suggest a rebutting statement from the chairman at Ford's own site."

Velasco says the situation should dictate strategy. "Sometimes you need to respond," he says. "Sometimes the [Usenet] conversation will police itself."

Tommy Hilfiger didn't wait. According to company spokeswoman Ruth Pachman, "As soon as the misinformation was brought to our attention," the company posted a statement to the appropriate newsgroups denying the allegations. The tactic worked, Pachman says, producing "immediate results." A look through the affected newsgroups confirms that the rumor has slowed to a trickle. And when somebody does post it, a 'netizen invariably posts the denial in response.

Although most Internet rumors appear to result from a newbie's ignorance or a cheezy customer, this is a ripe area for industrial espionage. All one needs is a shill with an electronic-mail account to plant falsehoods in the proper newsgroups, and *voila*: a competitor faces a costly, embarrassing media ordeal, and perhaps a lousy fiscal quarter or two.

Has it happened? "I've seen it happen," Stoakes says, although he declines to name names. "A company gets a couple of people — maybe one on each coast — to start a Usenet thread with a rumor about a competitor." He says small companies are more likely to play these dirty tricks than large corporations.

If you think your company couldn't possibly be the target of a 'net smear campaign, think again. Plug in the name of your company or best-known product at the Usenet search engine DejaNews (www.dejanews.com), and you may be in for a rude surprise.

Plug in "Disney," for example, and you'll see messages such as "Disney is anti-family" and "Gunowners: Join Baptist boycott of Disney!" There's even a whole Usenet newsgroup devoted to blasts at Walt Disney Co. It's called alt.disney.criticism. How convenient. □

Ulfelder is Computerworld's senior editor, *In Depth*. His Internet address is steve_ulfelder@cw.com.

Internet PR disaster plan

The following are unedited message headers pulled from a recent random surf through Usenet newsgroups:

**Best Buy is Consumer Unfriendly! (and Wal-Mart too!)
CompUSA and lousy service contract
DON'T BUY CHEVROLET!
First Union Screws Loyal Customers
AT&T Deceptive Practices — KNOW THE FACTS!
Help — MCI is trying to rob me of \$318!
NATIONS BANK A SORRY INSTITUTION
BEWARE OF GE MICROWAVES
This Just In! Microsoft Officly Sucks!**

Do you know what people are saying about your company in cyberspace? Too many organizations don't, according to Unity Stoakes, an Internet communications specialist at Middleberg Interactive.

"I was just at a crisis communications conference," Stoakes says. "Four huge companies were presenting on major crises, and not one of them addressed the 'net.'" (The companies were Pepsico, Inc., Texaco, Inc., The Prudential Insurance Company of America and The Hearst Corp.)

You need to monitor your business' standing on the Internet and be prepared to respond should something such as the recent Tommy Hilfiger disaster befall you. Here are some steps to take:

Know the turf. Familiarize yourself with the newsgroups, mailing lists, chat rooms and Web sites in which your organization is discussed. That way, if misinformation spreads, you'll know where and how to respond.

Don't underestimate. Stoakes advises treating Internet misinformation like a true media crisis, responding thoroughly and immediately. But that's a controversial point in the public relations community (see main story).

Go to the source. Stoakes says it's imperative to try to reach the individual or organization that launches the attack. "Establish a dialogue," he says. "Document everything."

Mind your manners. When you respond to an attack, follow the rules of 'netiquette. Use private E-mail before you send a message to a newsgroup. Don't cross-post unnecessarily. Even if you find the telephone numbers of the attackers, don't call them if you can possibly help it. A phone call will seem like a ham-fisted threat and will be immediately described and mocked on the 'net.

Prepare a contingency Web site. Middleberg helps clients set up a template so that if disaster strikes, they can quickly tell their side of the story and provide links and facts to the media.

Muzzle your mouthpiece. Stoakes says lawyers should be used as a last resort. He calls this the "David and Goliath syndrome." Nothing raises the hackles of the 'net faster than a legal threat. — *Steve Ulfelder*

Make your I.T. skills with this FREE tool

<http://careeragent.computerworld.com>

Use these FREE features at <http://careeragent.computerworld.com>

- Search for specific learning resources
- Describe your training and education interest areas
- Optionally receive email updates of new learning resources that meet your interest areas
- Describe your current or ideal I.T. position
- Assess your skills relative to the skills required for that position
- Calculate a personalized "skills gap" to compare your fit to that position
- Record work experience for use in skills assessment
- Define goals for later use in career planning

And if you're an I.T. manager concerned about staff retention, you'll want to check out the "about Careeragent" button also at <http://careeragent.computerworld.com>. Here you'll see how a corporate subscription to CareerAgent will help your entire staff assess learning styles and skills, calculate skill gaps, and search for training. As a manager, you can use CareerAgent's intelligent decision support system to calculate individual, group and department skill gaps.

The point? Every individual on your team has an idea of their career plan, and knitting these plans together can benefit corporate goals. Think about your current team today. Do individual career plans in your organization seamlessly benefit from available projects? Training resources? Corporate goals? Is this information connected to cost-effectively reskill and retain staff? It's all possible with CareerAgent, where management and staff can collaborate to continuously develop a career "itinerary" for each individual. On the Internet or your intranet. Your choice.

For details, see <http://careeragent.computerworld.com> or call 1-800-343-6474, x6000 today. And make every career on your team what it should be: a well-planned journey of enrichment.

& training take off

Search Thousands of Course Listings From:

Learning Tree International
Wave Technologies
Hewlett-Packard Educational Services
Boston University Corporate Education Center
Interpersonal Technology Group
DPEC
Business Communication Review
American Research Group (ARG)
IKON
HOTT (Hands on Technology Transfer)
NIIT, Incorporated
The Center for Systems Management
New Horizons Computer Learning Center of Boston
Sybase/Powersoft Education
ESI International
The Seale Group, Inc.
Strategic Management Group, Inc.
CBT Systems
Televerde
Classic System Solutions, Inc.
And more coming soon...

 **CAREER
AGENT**TM
careeragent.COMPUTERWORLD.com

CareerAgent is a trademark of COMPUTERWORLD and International

IT Careers

One year later, meet the IS class of 1996. They're ambitious. They're savvy — both in business and technical realms. They know what they want. And they've got the chutzpah to go for it.

By Alice LaPlante

NEWBIES

with

ATTITUDE

P

eter Troost was definitely an exception.

Like most of his fellow 1996 graduates from MIT's celebrated Sloan School of Management in Cambridge, Mass., Troost was besieged with job offers. They poured in from global management consulting firms, hot Internet start-ups and blue-chip technology companies that were looking for

MBAs to specialize in information systems management.

But unlike most of his classmates, Troost chose a traditional corporate IS job — as a project manager at The Gillette Co. in Boston.

"Virtually everyone else went into consulting," Troost recalls about the recruiting frenzy of a year ago. "They definitely thought I was 'unusual' for making the decision I did."

Troost's reasons for accepting a position at Gillette centered on long-term career and lifestyle goals. With an eye toward moving up the ranks of IS to senior management — chief information officer or chief knowledge officer — Troost had enough real-world experience to evaluate all the available choices.

Troost says he loved working with technology. He'd spent three years doing so at The Travelers in Hartford, Conn., after receiving his bachelor's degree in 1991. But he knew enough from his days in the IS trenches that he was more interested in the business aspects of IS than the hands-on programming. Troost says he wanted to immerse himself in challenging and varied work experiences. And after spending the previous summer interning at an IS consulting firm, he knew *that* life wasn't for him.



Jessica Lowe chose IS consulting to broaden her technology and business skills

"I didn't like the travel or the long hours," Troost says. "I had just gotten married, and I didn't want to be away from home all the time. And I believe in a healthy balance of work with personal interests. Gillette offered me all those things and more."

Troost's attitude is typical of the members of the Class of 1996. Although many chose the consulting route, all are well-versed in both business and technology. And they know what they want from their careers.

Each 1996 graduate *Computerworld* spoke with offers the following universal advice to those pursuing an IS career path: Ask questions. Be picky. And know you're sitting pretty.

CONSULTING TRACK

Like most management IS majors who graduated last year from the University of Minnesota, Jessica Lowe had her pick of job offers. And like an increasing number of her fellow graduates, she chose a consulting firm rather than a traditional corporate IS shop — in her case, American Management Systems (AMS) in Fairfax, Va.

Lowe says she felt AMS promised her the best opportunity to learn new technologies and expand her business knowledge.

She says her expectations have been more than satisfied.

Since joining AMS, Lowe has completed two major projects.

One was a client/server application that monitors permits for waste water for Minnesota's Pollution Control Agency. Lowe was responsible for development and testing on that project.

Lowe is currently helping Shell Oil Co. convert a mainframe-based document management system that tracks Occupational Safety and Health Administration guidelines to a client/server architecture. She has been involved with everything from design to development and is about to move toward testing the project.

"It's been very exciting, actually going out into the field and seeing how the technology we're building is affecting people and businesses," Lowe says.

VARIETY OF EXPERIENCES

Jason Wainstein chose his job as a systems analyst at Deloitte & Touche Consulting Group for similar reasons. "I wanted the most varied experience I could get — not just in different technologies, but in different company cultures and industries," he says.

According to Wainstein, new IS graduates are "in the lucky position of having choices. It's your responsibility to make the best and most-educated decision."

A 1996 computer science graduate from the University of Pittsburgh, Wainstein interviewed with more than 10 consulting firms before he eventually chose Deloitte & Touche. "They offered the most autonomy and

the most responsibility early on," he says.

Since joining the New York-based financial consulting firm, Wainstein has been working on "Oregon Access," a customized client/server development project for the state of Oregon's Department of Human Resources. He has written a 300-page, five-year planning document, conducted requirements-gathering sessions with users and has run release-system testing. He's done some programming in PowerBuilder and Sybase, Inc. databases, but the actual hands-on coding has been "on the lighter side," he says.

Since Wainstein lives in Philadelphia and his job assignment is in Salem, Ore., "it's been an intense commute," he admits. But he says Deloitte & Touche has been extraordinarily accommodating; he lives in a corporate apartment in Oregon during the week and has the option to fly home on weekends or have his girlfriend fly out to visit.

"At this point, I'm very comfortable with it," Wainstein says of the intensive travel. "I don't have children. I don't have a lot of ties. And I like seeing all the different cities and states."

At Deloitte & Touche, Wainstein is heavily involved in the National Analyst Program, a recent multipronged development initiative. The program was designed to help entry-level business and systems analysts navigate successful careers at the company. This includes formal training programs and quarterly meetings with analysts worldwide.

It also includes mentoring programs to make sure new hires get the career advice they need so they can become full-fledged consultants by the end of their third

year of employment. At that point, program participants can go back to school for an MBA — if they're endorsed by a senior member of the firm. "They provide the money and the laptop," says Wainstein, who intends to pursue this educational benefit.

TRAINING COURSES

Like her classmates, Jody Lembo interviewed with more than 10 prospective employers and received multiple job offers.

What made her choose Detroit Edison Co. was the superior training offered to selected new IS hires. She received her bachelor's degree in business administration, with a major in management IS, in 1996 from Central Michigan University in Mount Pleasant, Mich. "If you've got a technical degree, you're in demand. Remember that, and don't jump too quickly at that first offer," she says.

Lembo was specifically attracted to the utility's two-year "Professional Opportunities Program" that will rotate her through key IS departments and provide myriad internal and external training courses.

At the end of her two years, a professional mentor (assigned to her when she joined the company) will help her decide on a suitable permanent assignment.

Lembo's first rotation was supporting networked electronic-mail and calendaring applications; another rotation (her favorite thus far) was as a Unix systems administrator.

"Although I knew I wanted a career in IS, I really wasn't sure what I wanted to do," Lembo says. "I figured that two years in the working world getting a chance to try different things was the perfect opportunity to find out."

Among other training opportunities, Detroit Edison is paying for Lembo to earn her MBA through part-time classes at Wayne State University.

FINAL WORDS OF WISDOM

Most 1996 graduates felt well-prepared by their academic institutions for the IS working world. But nothing, they say, beats on-the-job experience — particularly with regard to teamwork. Which means that a No. 1 priority of all current students should be to pick up basic business skills and get an internship.

"Everyone has a different way of loading a Unix system. Detroit Edison does it one way; Chrysler does it another way. There's no way your college can teach that sort of thing," Lembo says. But she says Central Michigan did an excellent job preparing her for the fact that in the working world today, everything is done on teams.

"It's been said a million times, but an internship is essential," Wainstein says. "The most valuable thing you can do is immerse yourself in the real world."

Troost says he found that "generalist" business knowledge such as activity-based costing, economics and basic negotiation concepts were essential. In his MBA program, where he could choose his IS "electives" and required course work, he chose to take some advanced classes in "managerial communications," which focused on presentation, workshop facilitation and persuasion skills.

"I've found these sorts of things are what can make the difference between whether you succeed or fail," Troost says. □

LaPlante is a freelance writer in Woodside, Calif.

A GREAT PACKAGE DEAL

Just about any recent management IS graduate will glowingly preach the benefits of securing an IT internship while still in school. But Demmye Booras, who last year earned an MBA with an information-management concentration from the University of Texas in Austin, offers compelling proof.

A GREAT JOB

Booras' position as a senior business applications analyst at Federal Express Corp. came as a result of a summer internship she held at the international shipping titan during the summer of 1995.

"A lot of us interns from last summer came back as permanent employees," Booras says. This happened in one of the hottest job markets for IS workers in history, and among multiple firms that vied for the graduates' services. Why FedEx? "The people are great, the work exciting and challenging," she says.

One of the main attractions of the new FedEx applications development facility, constructed last year in Las Colinas, Texas (just outside the Dallas metropolitan area), is the opportunity to build a business and technology culture from scratch, Booras says.

Although headquartered in Memphis, FedEx opened the Texas facility to help lure top-notch IT professionals to a centrally located and technically vibrant site that would focus on new product development. Some applications will still be developed at the Memphis IT hub, where all ongoing maintenance of existing FedEx information systems will also take place.

"Because this is a new site, we're all deeply involved in making important basic decisions about organization and infrastructure and are otherwise helping build the culture from the ground up," Booras says. She has spent the past year participating in intensive recruiting activities to staff the new IT development center. She also worked on cross-functional teams to solve the operational challenges of getting a new site up and running.

Booras visited Memphis several times to tour the facil-

ities and become familiar with her IS counterparts there. She also makes frequent site trips to other FedEx facilities and to customer sites. Last year, during the busy Christmas season, she rolled up her sleeves like everyone else at FedEx and pitched in sorting packages. "I now have a thorough grounding in operations," she says.

"I wanted to set down roots. And I very much enjoy building long-term working relationships with people."

— Demmye Booras, FedEx

roots. And I very much enjoy building long-term working relationships with people," says Booras, who rejected several high-paying IT consulting jobs.

As for long-term career goals, Booras says, "I'm the wrong person to ask." One of the reasons she went with FedEx was that they promised her the chance to play a variety of technology-management roles.

"There are so many opportunities for those of us who have both technical and business skills," Booras says. "I'm just now seeing all the possibilities."

— Alice LaPlante



Multimedia technology expert Frank DeMartin looks at the job opportunities in this growing field. Visit our careers Web site at www.computerworld.com/careers.

Many have inclinations about taking their career to the next level. You, however have the inspiration to get there.

There are those with the power to drive the future, and those who settle for mediocrity. At DIGITAL, we know that it takes a special kind of person to confront challenge with inspiration. People who embrace the chance to develop unique ideas into successful customer solutions. If that sounds like you, we want you to join us.

Multivendor Customer Service Customer Support Center

The following telephone support positions are available in Alpharetta, GA; Shrewsbury, MA and Colorado Springs, CO.

UNIX Support Specialist Requires 3-5 years' experience in UNIX system management, system troubleshooting/configuration and problem isolation using TCP/IP and other network protocols. To qualify, you must have some internals level knowledge of UNIX or the ability to analyze system crashes; strong troubleshooting, communication and system administration skills; and an in-depth knowledge of networks, Windows NT or hardware.

OpenVMS Support Specialist Requires a minimum 3-5 years' experience in OpenVMS as well as VMScluster troubleshooting and isolation using crash dump analysis. The ability to work both independently and in a team environment is essential. Must also be skilled in the following areas: customer relations, troubleshooting, communication and OpenVMS system management. Knowledge of internals-level troubleshooting, Alpha, UNIX, networks, Windows NT or hardware would be beneficial.

Language Support Specialist Requires 3-5 years' experience with troubleshooting and problem resolution on OpenVMS and software layered products, primarily ACMS, C, C++, DCE, PL/1 and POSIX. Experience with ADA, BASIC, CICS, COBOL, RTR, FORTE, FORTRAN, Datatrieve and DECset would be beneficial.

Network Support Specialist Requires 3-5 years' experience in network troubleshooting and isolation using DECnet and other network protocols on multiple platforms. Knowledge of associated networking applications and strong account management/communication skills is essential. Microsoft NT Certification highly desirable.

www.digital.com/info/careers

DIGITAL offers competitive salaries and full benefits. Please send resume to: Digital Equipment Corporation, Attn: Staffing-WM, Dept. 016 CXO, 305 Rockrimmon Blvd. South, Colorado Springs, CO 80919-2398. Fax: 719-592-5255 or e-mail: C-MurawskiW@mail.dec.com We are an Equal Employment Opportunity employer.

digital
Whatever it takes.™

© Copyright Digital Equipment Corporation, 1997. Whatever It Takes is a service mark of Digital Equipment Corp. Trademarks appearing herein are the property of their respective owners.

Programmer Analyst [10 openings] (Job Order # GA 6122154): Plan, develop, test, and document computer programs and software applications on various hardware systems, including HP-3000; using a wide variety of hardware, software, languages and tools, including but not limited to Turbo-Image, Unix, Cobol, and C; Regs. 2 yr. exp. in the job offered or 2 yr. Exp. in a related occupation such as Sr. Prog. Analyst, Programmer, S.W. Eng., Systems Analyst, Sr. Systems Analyst, Consultant, Sr. S.W. Eng., and Bach.'s degree in C.S., Sys. Anal., C.I.S., M.I.S., Info. Tech., CIT, Computer Applications, Computer Systems, Comp., Electrical, or Electronic Engg., C.S. Engg., or Math., or its foreign educ. equiv. or its equiv. in educ. and exp. Will accept 3 yrs of college educ. and 3 yrs of related exp. in lieu of the required educ. and exp.; 1 Yr. of the exp. in the job offered or in the related occupation must have included using Turbo-Image Unix, Cobol and C. \$55,000/yr 40 hr/wk., 8am-5pm, M-F. Apply in person or send resume in duplicate with Job. No. to Georgia Dept. of Labor, 1525 Atkinson Rd., Lawrenceville, GA 30043-5601 or the nearest Dept. of Labor Field Office. Must have proof of legal authority to work in the U.S.

Software Engineer. 40 hrs/wk, 9am-5pm. \$44,000/yr. Design, develop, implement & test software for management information systems. Tools: COBOL II; DB2 & DB2 Workbench; SOL; OMF; SPUFI; TSO; CICS; JCL; Expediter; Platinum; File-Aid; Endeavor; Service Repository; Foundation Design/1 & Install/1; Foundation. M.S. in Computer Science as well as 1 yr. in job offered or as a Programmer/Analyst required. (*M.S. in science or engineering including 18 credit hours in Computer Science also acceptable.) Prev. experience must include: COBOL II; DB2; SOL; TSO; JCL; Install/1; Foundation. Must have proof of legal authority to work permanently in the U.S. Send two copies of both resume and cover letter to: ILLINOIS DEPARTMENT OF EMPLOYMENT SECURITY, 401 South State Street - 3 South, Chicago, IL 60605, Attention: Janet Aschenbrenner, Reference #V IL-17346-A. NO CALLS. An Employer Paid Ad.

COMPUTERWORLD FALL Campus Edition

Issue:
October 31, 1997
Advertising Deadline:
September 17, 1997

1-800-343-6474, x8000



Relax.

Busy looking for a new contract or full-time position? Why don't you check out **DICE**? We have the hottest jobs the WEB has to offer! **DICE** makes your job search easy, with thousands of listings for Programmers, Analysts and Technical professionals for all areas of expertise and all levels of experience. What's even better - we're **FREE**, providing detailed information so you can find the right contract or full-time position for YOU! Take a look for yourself!

www.dice.com

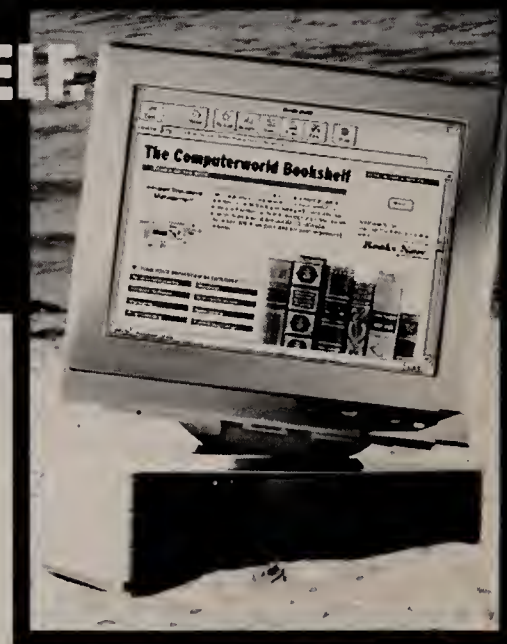
DATA PROCESSING
INDEPENDENT
CONSULTANT'S
EXCHANGE



Don't gamble with your job search. Use DICE.

A Service of D&L Online, Inc: 515-280-1144

BEFORE YOU HIT THE
BEACH, VISIT THE
@COMPUTERWORLD
BOOK SHELF



ONLY ON

@COMPUTERWORLD
The online connection for information technology leaders

www.computerworld.com

Thousands of developers build PowerBuilder™ and JAVA applications... One company leads the way...

Waterfield

As a leading provider of Client Server and Web Application Services, we are the only Powersoft Authorized Training Partner in New England. Our goal is simple: to leverage advanced technologies to build business value for our customers. Everyday, we set our sights a little bit higher and in the process we fuel our perpetual growth - an amazing 75% per year over the last 3 years. As we've expanded, we've worked diligently to combine the flexibility and culture of a small business with the extensive professional resources available in a larger company. At Waterfield Technology, you'll work with the leading Client/Server and Web technologies like PowerBuilder and JAVA while expanding your skills.

Software Professionals

The following opportunities are available in our **Boston and New York** locations:

- PowerBuilder Developers
- JAVA Developers
- Project Managers
- PowerBuilder Instructor
- QA Professionals

One or more of the following is required: 1+ years' PowerBuilder, 1+ years' RDBMS (Oracle, Sybase, SQL Server preferred), 1+ years' experience leading teams in a RAD environment, 1 year C++ or JAVA.

For QA professionals: 2+ years' QA experience in a software development environment, knowledge of QA methodologies and processes, and automated tools a plus.

Waterfield is an employee friendly company. We offer competitive salary and benefits, as well as great growth opportunities. There is limited overnight travel. Mail or fax your resume to: Nancy Beaumont, Waterfield Technology Group, Inc., 430 Bedford Street, Lexington, MA 02173. Fax: (617) 863-8408. Check out our web site: www.wtgi.com. EOE.

Waterfield

Boston ♦ New York

MANAGER, TECHNICAL ARCHITECTURE wanted. Responsibilities include ensuring that project teams leverage technologies which are robust and consistent with regional and global Information Technology (IT) strategies of a major tobacco corporation. This position will provide the company with a regional focal point for researching and evaluating future technologies which will be needed to support the changing regional and global business. This position will be responsible for managing the regional communication and group-working infrastructure and assisting in developing best practices for global communications. Six systems engineers will report directly to this position. Hours: 8:00am to 5:00pm. Salary \$84,900.00 per year. Qualified applicants must have a Bachelor's degree in Computer Science or a related field and six (6) years of related occupational experience in the Information Technology field. The six years of related occupational experience must include development of computer applications, including client/server and two years of management experience. In addition, six years of experience must include experience with S/390, IBM Mainframe, IBM RS6000, HP 9000, PC, CICS, DBMS (SYBASE, ORACLE, ADABAS/NATURAL, REDBRICK), MVS, UNIX, DOX, Windows, Windows 95, Windows NT, NetWare, Visual Basic, SOL Windows and the TCP/IP Protocol. Only persons authorized to work permanently in the US need apply. An equal opportunity employer. Submit resumes to: Jane Hosley, JO#KY0349917, Department for Employment Services, 275 East Main Street, 2W, Frankfort, Kentucky 40621. Job Order # KY 0349917.

SYSTEMS ANALYST. Analyzes user requirements, procedures, and problems to automate processing or to improve existing computer systems. Bachelor of Science degree in computer science, engineering, or math-related, and 2 yrs. exp. req'd. Must be able to travel. Two (2) yrs. exp. with COBOL, FORTRAN, PASCAL, BASIC, assembly languages of microprocessors (8086, 8085 Intels) Zilogs (Z80), Micro-controllers 8048, 8052. Will supervise 4. \$41,000/yr. Qualified applicants apply by resume to Georgia Department of Labor, Job Order # GA 6120655, 2943 N Druid Hills Road, Atlanta, GA 30329-3909, or the nearest Department of Labor Field Service Office.

Arbella, a top regional provider of all lines of insurance, has experienced amazing success and would like you to share in it. We currently have the following position available:

ORACLE 7 APPLICATION DEVELOPER

You will work on fully funded warehouse projects utilizing leading edge technologies including HP/UX, NT4.0, Oracle Express Multi-Dimensional Tool Set, OLAP tools, Powermart Migration/Metadata, BRIO reporting, and other decision support Client Service applications.

If interested, please send cover letter and resume to: **Jesus J. Bautista, Senior HR Representative, Dept. Code CW, Arbella Mutual Insurance Company, P.O. Box 9103, Quincy, MA 02269-9103; Fax: (617) 328-2872; or e-mail: resume.arbella@mcimail.com**

We are proud to be an equal opportunity employer

Arbella

Mutual Insurance Company

COMPUTER PROFESSIONALS You can have it all in America's Vacation Mecca

Our **Orlando, FL** client is experiencing tremendous growth. More than 70 IT positions including **Perm, Right-to-hire and Contract** to 65,000/year or to 40/hour

- Systems Analysts w/cr card exp.
- Prog/Analysts w/COBOL, CICS
- Software Quality Assurance
- Visual Basic, C++
- RPG 400
- MS SQL, OCX, ActiveX
- Oracle DBA

Source Consulting

Contact: Source Consulting a div Source Services Corporation
(reference req. FR6500)
fax: 305-820-5098 voice: 305-556-8000
email: wingert@sourcevc.com

JUNIOR I.S. AUDITOR

ULLICO Inc., a multi-million dollar financial and insurance services corporation with numerous offices throughout the country, has a **Junior I.S. Auditor** position available. This challenging opportunity will be located at our headquarters in Washington, DC.

As part of our corporate audit team, you will assist in conducting technical audits of mainframe, minicomputer and microcomputer based operating & telecommunications systems. You will also evaluate the effectiveness of internal control, data security, and report areas of risk to management.

The successful candidate will possess a BS in CS and/or Accounting, with 4 years experience in IS auditing on various platforms (IBM 3090, AS400). Must also possess knowledge of client/server technology, LANs, computer security issues/techniques (access control, disaster recovery planning, computer security awareness and training, operating system protection, computer virus prevention and client/server systems security). CISA, CPA and CIA desired. Must have strong interpersonal, presentation and written/verbal communications skills. Some travel will be required.

ULLICO offers a competitive salary and outstanding benefits package including company paid health, dental and vision coverage, matching 401(k) plan and tuition assistance. For immediate consideration, please send resume with cover letter & salary history to: **ULLICO Inc., Attn: HRD/JISA/CW, 111 Massachusetts Avenue, NW, Washington, DC 20001. FAX: (202) 962-8856. EOE, M/F/D/V.**

ULLICO Inc.

Chief Computer Programmer. Design, develop, implement & maintain systems using Natural/ADABAS. Design, create & test suites of programs using Natural structured mode, using proper structured analysis/design techniques. Train end users & subordinates. Must have proficient knowledge in creating, running, viewing output & debugging batch jobs, under MVS/JCL. Design/document database files/fields, programs, relationships & other modules using Predict. Determine compression & access methods. Create & maintain files/fields using both ADABAS online services & batch utilities. Create dataflow diagrams, flow charts, & other documentation using PC based tools (e.g. ABC, Word, etc.). Must have knowledge & be able to use other Natural utilities (e.g. module maintenance, buffer management). Must be able to relocate within the U.S. on a project-by-project basis. Required computer applications: NATURAL 2.1, PREDICT, JCL, COBOL, BASIC & C Programming, DBase II, Lotus 1-2-3, Multiplan, Wordstar, Word, Multimate, Adabas, NATURAL, NATURAL/VSAM, Structured design methodology. Must have Bach. or foreign degree equiv. in Business Computer Systems or related and 4 years' work experience in job offered or 4 years in related occupation with relevant computer experience. Hrs: 9a-5p, M-F, \$58,400 per yr. Apply to Georgia Dept. of Labor, Job Order #GA6120660, 2943 N. Druid Hills Rd., Atlanta, GA 30329-3909 or the nearest Dept. of Labor Field Service Office.

SOFTWARE ENGINEER to design, develop, test, implement, maintain and support server and middleware application software for client companies using Interactive Voice Response (IVR) system paradigms, cellular switch call record standards (AMA 8.0 and AS-123), object-oriented design methodologies (Jacobson and Booch), Sybase, Oracle, TCP/IP, ATM, RPC, C, C++, Shell, Perl, SOL and Rogue Wave libraries on UNIX and Windows platforms in a client/server environment. Require: M.S. degree in Computer Science with two years of experience in the job offered or in the related occupation of Research Assistant. Full or part-time equivalent experience gained before or after earning degree will be accepted. Extensive travel (50%) to various client sites within the US. Salary: \$77,000 per year, 8 am to 5 pm, M-F. Apply by resume to: Roz Alford, American Systems & Programming Co., 2521 E. Maddox Road, Buford GA 30519; Attn: Dept. NS.

Imagine...

...revolutionizing an entire industry. EQUIFAX Inc. — unsatisfied with the limits of current state-of-the-art capabilities, and challenged by the ever-constant need to process information faster and more effectively — is redefining information technology. And this gives you the opportunity to work with the best and brightest in your field, in a truly unique development environment which utilizes the most advanced tools and process methodologies available.

EXPERT SYSTEMS PROGRAMMING ARTIFICIAL INTELLIGENCE C++, OOD, OOA OPEN SYSTEMS DEVELOPMENT

SR. DEVELOPER/ENGINEER

This professional will apply emerging technology to solve complex data problems.

Position will involve the following:

- Expert systems programming
- OOP in a rule base system
- Analyzing data patterns
- Large scale mission critical system development

We are seeking an Expert Systems Programming professional with at least 3 years experience, who will be an independent, innovative problem solver. Art Enterprise experience is a plus.

Transform your career as you transform technology with the leader in supplying decision support information to businesses worldwide --EQUIFAX. Qualified candidates should forward their resume with salary history to: **EQUIFAX, Attention: Human Resources, P.O. Box 740006, Atlanta, GA 30374-0006; FAX: (770) 740-7461. Principals Only.** An Equal Opportunity Employer, M/F/D/V.

EQUIFAX

Visit our website at: www.equifax.com

Hamilton Standard

Software Design Engineers

United Technologies' Hamilton Standard Division is an aerospace pioneer with a history of innovation and success. We are currently seeking experienced Software Design Engineers for challenging assignments in our Flight Systems Product area at our Windsor Locks, Connecticut, facility.

These positions involve designing embedded avionics and control software using advanced computer systems and languages, including Ada, C and Assembly. Products include Data Management computers, Aircraft Environmental Controls, Air Data computers and Flight Controls. Processors cover the full Intel family, such as 80960, 486, 1750 and proprietary special purpose machines.

Product development at Hamilton Standard follows an orderly and well-established process compliant to DO-178B, DOD-STD-2167A and ISO 9000-3. This methodology is reviewed and revised regularly in response to opportunities for improvement in effectiveness and/or efficiency.

Requirements include a BSCSE, BSEE or BSCS and a minimum of 3-5 years of experience. The successful candidate should be skilled in both assembly and high order languages. Must also be familiar with real time microprocessor software development and modern Software Engineering practices. Object oriented skills are desirable. Knowledge of microprocessor hardware architecture and design is desired.

In addition to challenging work, we offer a strong commitment to career development, a superior Educational Assistance Program and a highly competitive wage and benefits package. Interested and qualified candidates should mail or fax (860) 654-5527 their resume and salary requirements to: Professional Recruitment, Department CW, (E-mail goodman@hds.utc.com), Hamilton Standard One Hamilton Road, Windsor Locks, CT 06096. We are an Equal Opportunity Employer. www.hamilton-standard.com



Hamilton Standard

A United Technologies Company

Two Decades Of Dedication All Come Down To You.

TSG Professional Services, Inc. is proud of the strong relationships we've developed with leading companies since we first began in 1980.

In this time, we have established an excellent reputation for ourselves and provided you with representation from the finest team in the IT contract consulting industry.

Our benefits package, which includes free technical training, group health/life insurance, and a 401(k) plan, demonstrates our consultant commitment to you. This dedication is evident in our almost twenty years of service and will be with us for future decades to come.

To learn about the exciting opportunities in your area, visit TSG Job Link on our web site or contact Victoria Vermette at 1-800-303-8855.

<http://www.tsgpro.com>



TSG Professional Services, Inc.
Member NACCB, EOE

Atlanta • Boston • Jacksonville • Tampa

FATS, Inc.

FATS is considered to be the brand name in small and supporting arms simulators serving Law Enforcement, Military, Hunter Education & Sports Training, and Vessel Weapons Engagement Training. Our products incorporate the most advanced technologies in our field, to include: electro-optics, audio, video, graphics, and real-time multitasking software. We are seeking:

Software Manager - Must have a minimum of 5 years experience in managing multiple development project teams utilizing C/C++, OOA/OOD in a Window / NT environment. Real-time simulation experience a plus. BS/MSC Computer Science / Engineering required.

Software Project Engineer - BS/MSEE with five years or more experience in real-time systems level design. Experience in graphics and video a plus. Must be a team leader who has taken a product from an "idea" all the way through production with customer interface.

Software Engineers - Optimum candidates will have a background in C++, object oriented programming, CASE tools, and real-time systems. BS/MS/CS.

Please forward resume to: FATS, Inc., 7340 McGinnis Ferry Road, Suwanee, Georgia 30174. FAX: (770) 622-3502; hr@fatsinc.com EEO/m/f/v/h

Global Resource Management
Technology Consultants

PowerBuilder/SYBASE \$120,000	JAVA/Web Developer \$110,000
ORACLE/UNIX \$100,000	CICS/DB2 \$90,000
IMS DB/DC \$90,000	UNIX Administrator \$70,000
MCSE/MCPS \$60,000	

GLOBAL RESOURCE MANAGEMENT
7785 Baymeadows Rd., Suite 108, Jacksonville, FL 32256
800-408-8005 (voice) • 888-408-8006 (fax)

Senior Software Engineer. Duties: Research, design and development enhancements to QMS software systems products including print systems, network interfaces and host based software, utilities and drivers. Analyze software requirements to determine feasibility of design within cost and time constraints. Debug and implement corrections for customer reported defects with limited supervision. Provide leadership and technical guidance to other engineers on complex and unique issues related to the evaluation of interface between hardware and software and operational and performance requirements of overall system. Formulate and design software system, using scientific analysis and mathematical models to plan and conduct assigned software and programming projects. Develop and direct software system testing procedures, programming and documentation. Utilize knowledge of UNIX operating system and C/C++ programming languages. Requires: M.S. degree in Computer & Information Science and 2 yrs. exp. in the job offered or 2 yrs. exp. as a Software Engineer. Concurrent experience must include: 2 yrs. experience utilizing UNIX operating system and 2 yrs. exp. utilizing C/C++ programming language. EOE. 40 hrs./wk.; 8:00 a.m. to 5:00 p.m. Salary: \$54,600/yr. Send resume (no calls) to: Holly McLellan, OMS, Inc., One Magnum Pass, P.O. Box 81250, Mobile, AL 36689-0013.

Microcode Test Engineer - Interface with microcode development team to continuously update testing requirements for complex disk array subsystems. Duties include building master test plan for the changing requirements; managing data center resources of a large number of mainframes, several dozens of Open Systems hosts and a vast storage facility to maximize test utilization; define and lead implementation of new monitoring and control systems for large OA computer data center based on new MMI tools and technologies. Requirements include a Bachelor of Science Degree in Computer Science or related field; with at least five years experience in job offered or in management of large computer data centers, with a large variety of hosts that service hundreds of users with many applications. Experience must include building and maintaining large monitoring systems based upon relational databases; thorough knowledge of data storage disk arrays in a development environment. Applicants must have unrestricted authorization to work in the United States. Salary \$65,000.00/yr. 40 hours/wk. Respond with two copies of resume to: Case No. 70551, P.O. Box 8968, Boston, MA 02114.

SOFTWARE ENGINEER: Design, develop and implement distributed client/server database applications in UNIX/C++ environment. Recommend, design, and develop enhancements to existing applications. Develop technical and user documentation. Requires: M.S. in Computer Science and 2 years experience in software development in C. Demonstrated knowledge of C, C++, UNIX programming, X25, UDP, TCP/IP, Oracle database design and administration, PL/SQL Reports, Internet tools, HTML, VAX/VMS, Fortran programming. Good communication skills. 40 hrs/wk (9:00 a.m. to 5:00 p.m.) \$59,500.00/yr. Send two resumes/respond to Case # 70455, PO Box 8968, Boston, MA 02114.

Systems Specialist - Support Billing Systems, Electronic Data Interchange -ANSIX12 Standards. Support Oracle financials, inc. set up and maintenance of Decision Support Software using Bus. Objects. Reqr. B.S. in Computer Science, + min. 2 yr. exp. programming in UNIDATA, SOL, COBOL, EDI Interfaces and Pick Based systems, such as Prime Infobasic and UNIDATA. Also, Oracle Financials, purchasing, inventory and gen. ledger exp. Salary \$49,110/yr., Work 9am - 5pm. Send 2 resumes to GA Dept. of Labor, Job Order # GA6116574, 1535 Atkinson Rd., Lawrenceville, GA 30243-5601 or nearest Dept. of Labor Field Svc. Office.

PROGRAMMER ANALYST. Develop & maintain financial/business software. Analysis of financial business flows. Consult with users to identify current procedures to clarify program objectives & determine user requirements using GUPTA SOLBase as a database, and GUPTA SOLWindows, and MS Access as development tools. Prepare flow charts. Convert project specs. into sets of detailed instructions & logical steps for coding in GUPTA SQLWindows. Design, develop & test programs to be coded in GUPTA SOLWindows. Install GUPTA SOLWindows program code on clients' machines. Create all necessary documentation for end users. Produce graphs & reports using GUPTA Report Windows and graph object. Must be willing to relocate within the U.S. on a project-by-project basis. Required computer applications: GUPTA SQL Windows, MS Access, SOLBase, Systems Analysis & Logical Design, GUPTA Report Windows. Must have Bachelor's Degree or foreign degree equiv. in Business Admin. or related and 2 years' work experience. Hrs: 9a-5p, M-F, \$48,000 per yr. Apply to Georgia Dept. of Labor, Job Order #GA 6122125, 2943 N. Druid Hills Rd., Atlanta, GA 30329-3909 or the nearest Dept. of Labor Field Service Office.

Software Developer, Associate

Develop/implement programming solutions for IBM MVS/ESA network & mainframe performance monitoring software, & assoc. distrib. messaging & connectivity applications, incl. use C/C++ & Perl programming langs., SQL, Visual Basic, PowerBuilder development environments. Either BS equiv. in comp. systems, eng. or science field, incl. coursework in scientific &/or bus-related applications, & 1 yr. stwre eng., software developer or program developer exp. involving development of hardware & user interfaces, incl. use of C/C++ in IBM mainframe & UNIX oper. systems environments, & software/utilities testing/documtatin; or 3 yr exp. \$56,160/yr. Mendon, MA job/intervw site. Resume to Ms. Counce, 2425 Olympic Blvd., Santa Monica, CA 90404.

Junior Programmer/Analyst (Boston, MA) Programming, maintenance & development of mainframe, on-line & batch information systems in NATURAL/ADABAS, employing JCL in MVS/XA environment. Requires Associate's Degree or functional equivalent in Computer Science, Computer Systems, or Management of Information Systems plus 1 yr exp. in job offered. Salary \$44,000 per yr. Send resumes in duplicate to Michele Jackman, Triad Data, Inc., 515 Madison Ave., Suite 1810, New York, NY 10022, Indicate Position No. G3073

CONSULTANTS IMMEDIATE INTERVIEWS

MAINFRAME

DB2 or CICS	VAX/COBOL	Internals	Focus	Bus/Analysts
DBAs	Year 2000	SAP	PL1	BAL
Natural 2	AS 400	CSP	IMS	IDMS/ADSO
Cobol	Modelers	Stratus	CICS 6000	Qual Assur
Unisys/Cobol				Tandem

CLIENT SERVER

Lotus Notes	Sybase	Unix	C or C++	HTML/JAVA
Sys/Admins	PowerBuilder	Help Desk	Qual Assur	Ingres
Smalltalk	Win NT or 95	Visual C++	DBAs	Peoplesoft
Oracle	NT Upgrade	TCP/IP	Vis Basic	HP Sys/Admin
LAN/WAN	FileNet	Informix	Testers	Encina
Tech Support	Novell	CORBA	OOA/OOD	Device Drivers

Rohn Rogers Consulting
Attn: Roger Sichel
1185 6th Ave., 36th Fl.
New York, NY 10036
800-421-5158 • 212-921-1319
Fax 800-770-6360
<http://www.rohn-rogers.com/rohn-rogers/>

Steve Wyne
1451 W. Cypress Creek Rd.
Ft. Lauderdale, FL 33309
954-489-2700
Fax 954-489-6474

Database Administrator. Perform logical & physical design of relational database for the Sybase SQL Server RDBMS. Code, test & implement the physical database. Make use of ERD and DSD techniques. Code database definitions. Design and develop stored procedures and triggers. Do SQL Server performance tuning. Specify user access. Be involved with system testing and work with users and management to draft additional user requirements and the system spec's. Develop UNIX shell scripts to be used in production as well as for database administration, maintenance & automation of tasks in a multi-server environment. Coordinate all database development & act as proj. leader for the development team. Experience in systems development with 3rd and 4th generation languages: COBOL, Pascal and sybase APT SQL necessary. Set up a report environment for end users. Experience with reporting and FOCUS necessary. Must be willing to relocate within the U.S. on a project-by-project basis. Required computer applications: Software/Programming: Sybase SQL Server, Sybase APT SQL, Transact-SQL, UNIX shell scripts, FOCUS, COBOL, PASCAL, Tandem Nonstop SQL. Hardware: Sun Sparc stations, IBM PC, IBM Mainframe. Operating systems: UNIX, SunOS (Solaris), MS Windows, MVS Case/methodologies: Erwin/ERX, Infomet, S-Designer. Must have Bachelor of Science Degree or foreign equivalent in Physics/Chemistry (Technical Degree) or related and 5 years' work experience in the job offered or 5 years in a related occupation with relevant computer experience. Hrs: 9a-5p, M-F, \$42,000 per year w/ possible overtime at \$45 per hour. Apply to Georgia Dept. of Labor, Job Order #GA 6121927, 2943 N. Druid Hills Rd., Atlanta, GA 30329-3909 or the nearest Dept. of Labor Field Service Office.

CONSULTANT-MANAGER (Pittsburgh). Manage public sector engagements involving business process reengineering & change management in connection w/implementation of large scale automated welfare systems for municipal & state governments. Confer w/client management & oversee budget & billing matters & manage the client relationship in connection w/implementation issues. Direct 8 consultants & client staff. Reqs. Master's degree in Business Administration, Management or Industrial Administration + 1 yr. exp. in job offered or 1 yr. exp. as a Senior Consultant. The 1 yr. exp. must involve business process reengineering of welfare delivery systems. Must be willing to relocate to worksites nationally. 40hrs/wk, 9am to 5pm, M-F. \$84,445/yr. Submit resume indicating Job Order Number 8024567 to the Pennsylvania Job Center at: Mr. James McCoy, Manager, Office of Employment Security, 6206 Broad Street, Pittsburgh, PA 15206.

SOFTWARE ENGINEER to design, develop, test, implement, maintain and support software systems for various applications using object oriented techniques, configuration management tools (CMVC), C++, Motif, Rogue Wave tools.h++, System V IPC, SQL Objects, xdb, purify, quantify and make on HP-UX and Sun Unix platforms; Integrate applications with Oracle RDBMS. Require: M.S. degree in Computer Science with two years of experience in the job offered or in the related occupation of Systems Analyst; Extensive travel (50%) on assignments to various client sites within the U.S. Salary: \$68,000 per year, 9 am to 6 pm, M-F. Apply by resume to: Roz L. Alford, American Systems & Programming Co., 2521 East Maddox Road, Buford GA 30519; Attn: Job NK.

Director Information Technology

Direct Operations, Technical support, Networking and Database activity for prominent Tennessee major corporation. Environment includes CA Unicenter, NT and Lotus Notes. Experience should include managing data center, technical support, and networking.

Please forward resume to: Kukoy Associates, PO Box 2603, Evergreen, CO 80439. e-mail: kukoyassoc@aol.com

Sr. Analyst Programmer - Charleston, WV - Analyze requirements, design, develop, test & implement UNIX and client/server environments using Informix-4GL, Qbasic and UNIX Shell Programming. M-F, 8AM-5PM, 40 hrs/wk, \$52,000/yr. Req. Bach in Comp. Sci., Statistics or Math and 2 yrs exp. Send resume or report to: Charleston Job Service, 1321 Plaza East, PO Box 1349, Charleston, WV 25325-1349, Phone 304-558-0342, JO# WV0510641

SOFTWARE ENGINEER to design, develop, test and debug device drivers for RAID products under Windows 95/NT operating systems using C, C++, Intel Assembly, Turbo Assembly debugger, InstallShield, SCSI Analyzer and Digital Logic Analyzer; Perform OEM specific customization for existing RAID product software; Develop OEM specific software modules for RAID products. Require: B.S. degree in Computer Engineering with 6 months experience in the job offered. Salary: \$35,350 per year, 8 am to 5 pm, M-F. Apply by resume to: Xina Tuerke, Human Resources, American Megatrends, Inc., 6145-F Northbelt Parkway, Norcross GA 30071; Attn: Dept A.

Find
training
now.



careeragent.computerworld.com



<http://careers.computerworld.com>

Software Engineer responsible for research, design & development of computer software modules & systems in conjunction with hardware product integration for industrial, communications & scientific applications; applies principles, techniques & methodologies of mathematical analysis, computer science & engineering; analyzes software requirements to determine feasibility, cost & time required, compatibility with current systems & computer capabilities; consults with hardware engineers & other engineering staff to evaluate hardware/software interfaces & operational & performance requirements of overall system; formulates & designs software using the scientific method & mathematical models to predict & measure the results & impact of design; develops & directs software system run procedures, programming & documentation; consults with customers on maintenance of software system; coordinates installation of software. Requirements are a Master's degree in Computer Science or Computer Applications with 2 years experience in job offered or 2 years experience in an Information Systems Environment designing, developing & implementation using COBOL, C, SQL, UNIX, financial applications software such as general ledger, cash management, accounts receivable & accounts payable. 40 hr work week: 8:15 am to 5:00 pm M-F. Salary: \$59,488.00 per yr. Send 2 copies of your resume to: Case #70392, P.O. Box #8968, Boston, MA 02144. EOE. Applicants must be U.S. workers eligible to accept employment in the United States on a full-time basis.

SOFTWARE ENGINEER required. Software design & development for Windows & UNIX platforms using Visual C++, Oracle RDBMS & UNIX shell programming. Masters degree required in any computer related field of study plus two years experience in any occupation with the above experience. Must be willing to relocate to various unanticipated work sites throughout the USA every 4 to 10 months-Employer will pay necessary travel between assignments. Must have proof of legal authority to work in the U.S. Salary: \$66,000.00/year for a 40 hour work week. Apply at the Texas Employment Commission, TEC Building, Austin, Texas 78778-001. J.O. Number **TX7857538**. Ad paid by an Equal Opportunity Employer.

Twenty Programmer/Analysts sought to design, develop, program, analyze, maintain and test on-line and batch systems for clients in an IBM mainframe environment. Applicants must have a Bachelor degree in Computer Science, Engineering or Mathematics plus 2 years experience in the job offered or as a Systems Analyst. Such experience must include full life cycle development and structured programming utilizing IMS DB/DC, DB2, COBOL. Hours: M-F, 8-5; 40 hrs/wk. Salary \$52,000/yr. Must be willing to travel to various client sites throughout the U.S. If interested please send two resumes to Case, #70578, PO Box #8968, Boston, MA 02114.



SUN's hottest business unit wants you!

Join the Sun Professional Services and technical solutions delivery team! Experience the excitement and advancement opportunities of a young organization backed by the power of an industry leader. Candidates will have a minimum of 6 years of experience in UNIX consulting, systems integration, project management, client/server design and operations, Internet design and application, applications development and UNIX administration.

Engagement Managers

Manage the delivery of on-time, within budget integration solutions to meet customer expectations, as well as establish account relationships, negotiate contracts, orchestrate proposals, develop project plans and maintain financial controls. Must be experienced in managing multi-million dollar projects.

Network Specialists

Must have experience in delivering projects and have in-depth knowledge of at least three of the following: SunOS, Solaris, TCP/IP, related protocols, RMON, OSPF, ATM, Fast Ethernet, SNA, DecNet, Sun Net Manager, SPX/IPX, SKIP, HP OpenView or CiscoWorks.

Security Specialists

Must possess strong technical skills in three or more of the following areas: Solaris, SunOS, network security, Raptor, SNMP, Firewalls, C, access control services, sendmail, DNS, Internet hosts, installation, configuration and audit of applications, data management or TCP/IP.

Internet Architects

Architect and deploy Internet provider systems, networks and applications, as well as provide systems management expertise and Internet consulting services to Sun customers.

Technical Managers

You will interface with customers to develop, analyze and provide counsel on UNIX based client/server solutions, trends and technical computing. Requires experience in designing and deploying systems architectures for business applications, as well as an in-depth knowledge of client/server systems, UNIX, LANs, WANs and relational databases.

Oracle Applications Consultants

Identify, develop and deliver solutions for the integration of Oracle applications and database products on Sun's SPARC/Solaris platform. Advise clients on system, networking and hardware planning in terms of Oracle product integration. Requires system and network management skills in a UNIX environment.

Object-Oriented Application Architects

Requires in-depth knowledge of UNIX, object-oriented software engineering, object modeling technique. Booch Methodology, C++, Java, Smalltalk, and relational databases (Oracle, Sybase or Informix).

SAP Basis Consultants

Involves SAP R/3 Basis component integration on Sun platforms, and system, networking, and hardware planning in terms of R/3 integration. Database administration, UNIX administration (preferably Solaris), SAP R/3 Basis architecture and RAID technology. SAP R/3 Basis certification a plus.

Enterprise Servers Specialists

Should have experience in foundation services & system and network management activities on large, multi-processor servers. This includes server and network sizing for the hosting and delivery of applications and databases at the enterprise level in heterogeneous environments. Experience in SunNet Manager, OpenView, Solstice Enterprise (or Domain) Manager, CA Unicenter, Netview, SNMP, MIB, 100BT, FDDI, ATM, SMP, and Enterprise.

High Availability Specialists

Should be experienced in the redundant server design, configuration, installation and support. Experience in HANFS, OpenVision, Qualix (HA+), Veritas (First Watch), Parallel Server, and Cluster.

We have positions nationwide. Travel required.

For positions on the West Coast and mid-America: Please send your resume, indicating job code ACWO714AB/RK to: Sun Microsystems, Inc., Attn: Ruth Koomruian, 1500 Salado Dr., Bldg. 19, Mountain View, CA 94043. Fax: (415) 336-1073; email: ruth.koomruian@eng.sun.com in text or ASCII

For MD, VA, DC and South East positions: Please send your resume, indicating job code ACWO714AB/CM, to: Sun Microsystems, Inc., Attn: Chris Mason, 7900 Westpark Dr., McLean, VA 22102. Fax: (703) 208-5836; email: chris.mason@east.sun.com in text or ASCII

For North East and Oracle and SAP Basis Positions: Please send your resume, indicating job code ACWO714AB/KW, to: Sun Microsystems, Inc., Attn: Kristina Werner, 400 Atrium Dr., Somerset, NJ 08873. Fax: (908) 302-3939; email: kristina.werner@east.sun.com in text or ASCII

Sun is proud to ensure equal talent always gets equal opportunity.



THE NETWORK IS THE COMPUTER™

w w w . s u n . c o m / j o b s

Free Resumé Distribution

Since 1994, over 20,000 experienced computer professionals have used Skill Scan to promote their skills. By submitting your resumé you will reach over 100 of the nation's top agencies/consulting firms as part of our weekly CD-ROM database (and it's free!)

Submit your resumé today to:

Fax: (800) 369-4067

or resource@in.net



www.skillscan.com

SOFTWARE ENGINEER

Duties: Design, develop and test computer programs for business applications; analyze software requirements to determine feasibility of design; direct software system testing procedures using expertise in Telecommunication Systems, large switching systems and line peripheral software, C++, Motif and X-Windows. **Requirements:** Bachelor's Degree or equivalent in Physics, Computer Science or related field, 2 years experience as Software Engineer or Computer Programmer, knowledge of Telecommunication Systems, large switching systems and line peripheral software, C++, Motif, X-Windows. **Salary:** \$45,000. **Working Conditions:** 8 a.m. to 5 p.m., 40 hours/week. **Apply:** PA Job Center, 32 Iowa Street, Uniontown, PA 15401. No. 8025100.

Integrated Systems Professionals

A Fast-Growing National Consultancy Offers Exciting Opportunities For Top Quality Professionals.

Project Managers Team Leaders/Consultants

- Long-Term Career Opportunities
- Short-Term And Long-Term Contract Opportunities

Experience in all SAP R/3 Modules Basis and ABAP Oracle • PeopleSoft • Baan

Performance-Based Compensation provides exciting opportunities for experienced professionals. (To \$250K OR \$150 per hour for experienced SAP experts)

Please fax resumes to 516-625-0740 or visit us at <http://www.iprr.com>

IPR INC.

www.placeum.com

PLACEUM 2000 for I/S Professionals

Job Seekers

- FREE Job Search
- FREE Private E-mail to Qualified Job Seekers
- FREE I/S Resume Posting

Recruiters/Hiring Mgrs.

- Search quality Resume database
- Post/Search Hot List
- Unlimited I/S Job Postings
- Chat Rooms

COMPUTER

OUR EMPLOYEES ARE THE KEY TO OUR PROSPERITY!



Open the door to a prosperous career at **JBA International**, where we are committed to success...and we realize that empowering our employees to lead and develop our exciting company is the key to this success. Our explosive growth is a direct result of our dedication and philosophy of investing in our employees. We have recently posted record revenues and are in need of extraordinary people to join us as we conquer the challenges of the 21st century.

JBA International is a leading global provider of fully integrated business applications for Financial, Manufacturing, Customer Service/Logistics and Service Management solutions for the Food, Automotive, Drinks, Style and Pharmaceutical industries. Through a network of offices and support centers in 46 countries, JBA delivers technological expertise with high quality service and support. We currently have the following positions available in our **Chicago, Detroit, Dallas, Cincinnati, Tampa, Atlanta, Boston, Toronto, Quebec, Peoria, IL, Mt. Laurel, NJ and Costa Mesa, CA, offices:**

CONSULTANTS

5+ years experience with software application consulting, implementation, support and education in the areas of Distribution, Manufacturing, Finance or Customer Service/Logistics. Project Management and leadership skills required. **Job Code: NA102CW**

TECHNICAL CONSULTANTS

5+ years experience in program specification and testing, estimating and quoting techniques, presenting technical consultations to clients. Strong leadership skills, project management experience and advanced programming ability. Direct experience with OS400, UNIX, RPG, Visual Basic and C++ preferred. **Job Code: NA103CW**

PRE-SALES CONSULTANTS

5+ years direct industry experience presenting and supporting business solutions to clients with thorough understanding of Distribution, Financial or Manufacturing applications. Ability to prepare estimates and influence at high organizational level. Strong front-end consulting skills. **Job Code: NA104CW**

PROGRAMMER/ANALYSTS

Application Programmers with strong hands-on RPG/II experience as well as AS400. JBA package experience a plus. **Job Code: NA200CW**

Integrated software application experience required for all positions.

We currently have many similar positions available throughout the United States. JBA International offers a challenging environment with great opportunities for personal and professional growth and an excellent salary and benefit package. For immediate consideration, please send resumes, with salary requirements and appropriate job code, and location of interest, to:

JBA

JBA International
North American Staffing
161 Gaither Drive #200
Mt. Laurel, NJ 08054
Fax: 609-231-4748
Visit us at www.jbaintl.com
No phone calls please!

V.P. IT CONSULTING

(Denver, St. Louis or Omaha)

Exceptional opportunity for a talented leader with intense drive and a strong desire to build your own business. Triple-I is a thriving IT consulting organization. For two and a half decades, we've helped leading companies and governments be more successful through the use of information systems and technology. Denver, Omaha and St. Louis offices have an excellent customer base and a team positioned for growth. The responsibilities require a history of successful leadership in the IT world preferably in consulting, IS management or outsourcing. Senior level compensation package with equity opportunity. Confidential. **Contact W. Pemberton 1-800-444-8101 or fax resume to (913) 262-4224.**

EOE

SOFTWARE ENGINEER

Duties: Design, develop and test computer programs for business applications applying computer science and engineering principles, evaluate requests for modification of programs and consult with management to design software programs using expertise in Powerbuilder 3.0 and 4.0, Sybase System 10, VAX/VMS, C and OC/OS Library. **Requirements:** Bachelor's Degree in Engineering, Computer Science or related field, 5 years experience as Software Engineer or Computer Programmer, or Masters Degree and 2 years experience, knowledge of Powerbuilder 3.0/4.0, Sybase System 10, VAX/VMS, C and OC/OS Library. **Salary:** \$65,000. **Working Conditions:** 8 a.m. to 5 p.m., 40 hours/week. **Apply:** PA Job Center, 2103 Ninth Avenue, Beaver Falls, PA 15010. No. 6012549.

Software engineer with three years of experience as a s/w engineer or computer professional who will develop s/w systems, applying computer science engineering and mathematical analysis with three years of experience using UNIX and at least one year of experience with Progress RDBMS and GUI Analyzes s/w reqs and performs testing and user training after development. Extensive travel and frequent relocation. Bachelor's degree in engineering mathematics computer science or physics. \$47,000/yr 40hrs/wk, 9:00-5:00. Send resumes, listing job number 2012611 to: Ms. Joan Lang, Mgr. Office of Employment Security 320 Bismarck Dr. Pittsburgh, PA 15205

Systems Analysts (Multiple Positions) - Design, test and implement Info. Mgmt Systems using CICS, COBOL & DB2 on UNIX based hardware. Reqs Bach in Comp Sci. Math or any Engr field and 1-2 yrs experience. Employer is a Computer Consulting firm; relocation to various client sites required for periods of 6 months to 2 years. M-F, \$50,000-\$67,000/year, 40 hrs/week, 8AM - 5 PM. Send resume and copy of ad to: Wendy Hall, COMSYS TECHNICAL SERVICES, INC., 4000 McEwen Road South, Dallas, TX 75244, Ref. #101-105.

PeopleSoft

We are seeking Professionals to join our PeopleSoft Consulting Practice—all modules. Contract & permanent positions available nationwide.



Attn: Craig Stevens
Tel. 1.800.676.7374 ext. 227
FAX +1630.717.0909
cstevens@trans-tech.com
www.trans-tech.com



Isn't it nice
to know you're
reading the
best online
weekly?

21 of The World's Smartest Interactive Media Experts Agree On One Thing: @Computerworld Has The Best Editorial Content

An international panel of 21 authorities in the fields of journalism and interactive publishing selected @Computerworld from among 160 entrants representing 26 different countries for top honor in the weekly category for "Best Online Editorial Content". Editor and Publisher Interactive sponsors the awards, now in their second year. Other winners this year included The New York Times on the Web and C/NET.

If you haven't visited us lately, here's what you're missing:

- Latest News updated three times daily

- CW Audio With Online Audio from Industry Newsmakers
- The @Computerworld Minute, a daily online audio news program
- Tech City- A New World Of IT Commerce and Service
- The @Computerworld Quick Poll - Your opportunity to be heard on industry issues Plus online forums and weekly features from Computerworld and the @Computerworld staff of online editors.

So, find out why Editor & Publisher singled out @Computerworld. Visit us today at www.computerworld.com.

1997
Editor & Publisher
**BEST NEWSPAPER
ONLINE SERVICE
WINNER**

Award: Best Editorial Content
By An Online Newspaper Service
Category: Weekly and Other
@COMPUTERWORLD
www.computerworld.com

@COMPUTERWORLD

The Online Connection for Information Technology Leaders

www.computerworld.com

SAP


WORLDWIDE IMPLEMENTATIONS
**ALL
MODULES**
**FUNCTIONAL
CONFIGURATION
ABAP
BASIS**
**POSITIONS THROUGHOUT
THE U.S. AND ABROAD**

1975 North Park Place
Atlanta, GA 30339
800-599-9550
770-955-1714
FAX: 770-937-0423
e-mail: slc11@aol.com
EOE, MEMBER NACCB


**STRUCTURED
LOGIC
COMPANY, INC.**
SAP NATIONAL Implementation Division


GOING ABOVE AND BEYOND YOUR EXPECTATION OF A CAREER IS SOMETHING WE TAKE PRIDE IN. BECAUSE AT BSG ALLIANCE/IT, INC., WE GIVE YOU THE LEVERAGE TO REACH YOUR PERSONAL BEST. AS THE LEADER IN THE NEWEST GENERATION OF IT SERVICES AND CONSULTING, BSG IS COMMITTED TO PROVIDING EMPLOYEES WITH EVERYTHING THEY NEED.

OUR PROGRESSIVE ATTITUDE AND POPULAR INDUSTRY PRESENCE HAVE EARNED US THE REPUTATION AS ONE OF THE "TOP 25 COOLEST PLACES TO WORK" BY FORTUNE MAGAZINE. AND WITH A GROWTH IN ANNUAL REVENUE EXCEEDING 50% EVERY YEAR, FINDING A RUNG ON OUR CORPORATE LADDER HAS NEVER BEEN EASIER.

TECHNICAL SERVICES

UNIX SYSTEMS ADMINISTRATORS

Requires Solaris, HP, or AIX with networking experience in TCP/IP, DNS, NIS, NIS+.

DATABASE ADMINISTRATORS

Requires database administration with experience in Sybase, Oracle or Informix.

CAPACITY PLANNING ANALYSIS

Requires fault tolerant/high availability architecture with experience in Storage Management or Load Balancing.

ENTERPRISE LEVEL CONFIGURATION MANAGEMENT

Requires application migration/tools and SDLL Support.

ENTERPRISE LEVEL SYSTEM MONITORING

Requires Remedy, Tivoli, HP Openview or other network monitoring tools.

PACKAGE SERVICES

CLIENT SERVER DEVELOPER

Requires 1 year of PowerBuilder development with experience in Sybase, Oracle, Informix, SQL Server or other databases.

ASCENDING OPPORTUNITIES

FOR LEADERS WITH A VISION

CURRENTLY, WE HAVE THE FOLLOWING POSITIONS AVAILABLE
THROUGHOUT THE U.S.:

DEVELOPMENT SERVICES

RETAIL PROJECT LEADER

Requires 5-7 years' Big Six experience or similar retail experience. Candidate must have strong project management and customer management skills with Package implementation experience.

OBJECT ORIENTED SENIOR PROJECT MANAGER

Requires 5-7 years' Big Six experience. Candidate must have 4+ years' project management and 2+ years' OO methodology experience. Knowledge of OO architecture and framework a plus.

OBJECT ORIENTED DESIGNER/DEVELOPER

Requires 2+ years' C++ programming.

Applicants must be willing to travel and appreciate a rapid pace.

Send resume to: BSG Alliance/IT, Inc., Dept. CW.6/30,
5400 LBJ Freeway, Ste. 600, Dallas, TX 75240.

Fax to: 972-661-3629, or

E-mail: resume_dallas@bsginc.com



BSG IS AN EQUAL OPPORTUNITY EMPLOYER

FOR ADDITIONAL EMPLOYMENT OPPORTUNITIES WITH BSG, VISIT WWW.MONSTER.COM/BSG

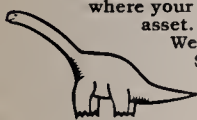


Share the success with us!

SAP R/3 Professionals
- all applications -

ARE DINOSAURS TO SLOW FOR YOU?

Change over to the fast lane and join our team where your individualism and personality is an asset.



We are an international SAP dedicated Solutions provider with leading edge competency. Our clients appreciate our commitment and highest quality deliverables.

Various challenging projects and excellent opportunities are waiting for you. Take your career to the next level and make the leap with us!

Please forward your resume in confidence to:

RSI Realtime Solutions, LLC,
Human Resources, 1250 Bayhill Drive,
Suite 121, San Bruno, CA 94066
Tel: (415) 869-5855 Fax: (415) 869-5899
e-mail: HRUS@realtimegroup.com

SAGE and ICS CONSULTING SERVICES, INC.

GREAT PROJECTS AVAILABLE NOW!

ISSUE COMM; VANTAGE; L70; L/C; CK4; ect..

Texas and Nationwide (all platforms)

also
COBOL; CICS; DB2; Tech Writers; PeopleSoft; SAP; Assembler;
PowerBuilder; Java; Y2K; Many more...

VP Recruiters proven track record required!
Commission or F/T
Far West Houston and other cities

CALL/FAX NOW!! We compensate for all referrals!

Sage and ICS Consulting Services
P.O. BOX 689, FULSHEAR, TX 77441-0689
(E-MAIL) psage32328@aol.com

PH: 281/346-2950 FAX: 281/346-2333

POWERCOM-2000, Inc., is a fast-growing software company that provides EDI, CD-ROM, and small business system solutions to manufacturers, distributors, and dealers in North America, Europe, and Australia. POWERCOM-2000 is a wholly owned subsidiary of Briggs & Stratton Corporation, a fortune 500 company. We have excellent career opportunities for self motivated team players with strong interpersonal and communication skills.

Be part of a growing software development team that creates 32-bit Windows/95 applications for Point of Sale, Inventory Management, General Business Management, CD-ROM publishing and EDI systems.

Analysts and Senior Analysts

These positions require strong analytical, communication and organizational skills along with experience in a structured design or object oriented methodology. Experience with business transaction processing is also needed. Relational database design experience is a plus.

Project Managers

These positions require strong project management, organizational and communication skills as well as experience with personnel management. Also requires a demonstrated ability to apply methodologies and tools to deliver quality products to market on time and within budget.

POWERCOM-2000 offers a comprehensive salary, benefit and incentive compensation package. If interested, please send resume with cover letter and salary history in confidence to:

Human Resources
POWERCOM-2000, Inc.
102 N. Cascade Avenue, Suite 600
Colorado Springs, CO 80903



Senior Software Engineer:
Assist clients in migrating from Legacy Applications to Client-Server based technology using business process re-engineering methodologies; develop client server applications using graphical user interfaces (GUI) such as MS Windows, Object Oriented Design & third & fourth generation Languages such as C++, Visual Basic, & Power Builder; also develop special applications for use by information companies serving the consumer packaged goods industry (CPG) using Inf*act workstation, Oracle, & Essbase; develop, design, document, train users & support existing systems. 40 hrs/wk, 9am - 5pm. \$55,000.00/yr. Minimum requirements: Must have Bachelors degree in Computer Science or Engineering. Must have two years experience in the job offered or as a Software Engineer. Experience must include client server development using object oriented design development with C++, Visual Basic, Power Builder, Oracle, Essbase & Inf*act workstation. Deerfield, IL location. Must have proof of legal authority to work permanently in the U.S. SEND 2 COPIES OF BOTH RESUME & COVER LETTER TO Illinois Department of Employment Security, 401 South State Street - 7 North, Chicago, IL 60605 ATTN: MARY MILLEA Reference # V-IL 16494-M AN EMPLOYER PAID AD NO CALLS

Something for everyone.

An international consulting company CPL WorldGroup has been placing highly skilled computer consultants around the world for more than 25 years.

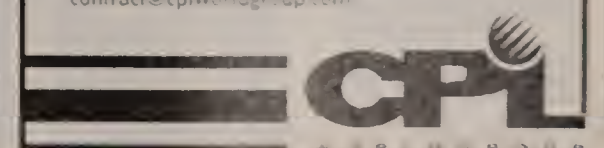
With the breadth of in demand contract, coupled with the right skills, you will not only have the opportunity to do what you want where you want. Right now we are looking for CONSULTANTS with the following selection of skills:

NATURAL ADABAS

COBOL CICS DB2

CLIENT SERVER DEVELOPERS

Interested? FAX or email your resume to
CPL WorldGroup 513/472-4904
contract@cplworldgroup.com



IF YOU SPEAK ORACLE, TALK TO US!

We're Precision Response Corporation, the teleservices outsourcing company preferred by Fortune 500 clients seeking today's most innovative products and services.

We are not a consulting company. The information delivery challenges we address each and every day, require the specialized skills of an elite group of Information Technologists working in a cutting-edge environment. Together, our advanced client/server infrastructure and serious technology investment communicate our commitment to providing you with one of the industry's best Designer/Developer 2000 setting. And, ideally located in beautiful South Florida where there is plenty of warm sunshine, fabulous coastal beaches, plenty of cultural diversity and recreation activities for all, PRC is where ORACLE is spoken by the best Information Technologists in the business. In the words of our Director of Applications Development, "PRC succeeds because we're able to provide our clients with customized, technology-based solutions that help them win in today's competitive business world. It takes the best talent, the latest tools, and ongoing commitment - that's PRC." So what are you waiting for? Join us today!

ORACLE Project Managers & Sr. Programmer/Analysts

Both of these positions require a Bachelor's degree and a minimum of 3-6 years IT experience along with demonstrated ability to communicate technical issues, analyze/create functional specs, and generate effective project plans.

Our Project Managers will be responsible for the management and direction of development projects which create application systems. To qualify, you must have at least 5-8 years in Information Systems with a minimum of 1-3 years project management experience in a software development client/server environment. An ORACLE technical background is preferred, but not required.

Our Programmer/Analysts will design, test, create and support computer programs required to solve business problems in accordance with software development standards, and will deal with a variety of business issues that are very complex. To qualify for these positions, you MUST have heavy ORACLE-based experience along with representative knowledge of at least some of the following:

ORACLE 7.x, Forms 4.5 & Reports 2.4 *object-oriented technologies * reusable data models * GUI design * client/server architectures * client/server generator tools * UNIX * Designer/Developer 2000 * systems analysis & design * structured design methodologies * PVCS * Sim Versioning tools * SQL/SQR * JAD/RAD * CASE tools

Respond to our need for ORACLE expertise and we'll tell you all about our extensive training programs, outstanding compensation (NO STATE INCOME TAX!), great benefits package, which includes relocation assistance, and growth-driven plans. Reply in confidence today to: **Technical Recruitment Director, Precision Response Corporation, 1313 NW 167th Street, Miami, FL 33169. FAX: 305/816-2277.** Or you may e-mail your resume to pgull@aol.com as a PLAIN ASCII TEXT FILE ONLY (MS Word preferred). For additional information on our company, please see our internet website at: <http://www.occ.com/precision/>



Precision Response Corporation

An Equal Opportunity Employer

Software engineer with two years of experience as a s/w engineer or computer professional, who will develop s/w systems, applying computer science, engineering, and mathematical analysis, with two years of experience using Visual Basic, MS-Access, MS-DOS, MS Windows and at least one year of experience with SQL and ODBC. Analyzes s/w reqs. and performs testing and user training after development. Extensive travel and frequent relocation. Master's degree in engineering, mathematics, computer science or physics. \$58,000/yr. 40 hours/wk., 9:00 - 5:00. Send resumes, listing job order number 7025037, to: Mr. Vince Mezeivich, Mgr. Office of Employment Security, 345 Fifth Ave., McKeesport, PA 15132.

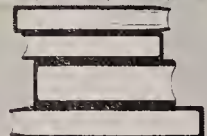
Chicago Area

**CORPORATE
TECHNICAL
RECRUITING
CONFERENCE**

COMPUTER WORLD

1-800-488-9204

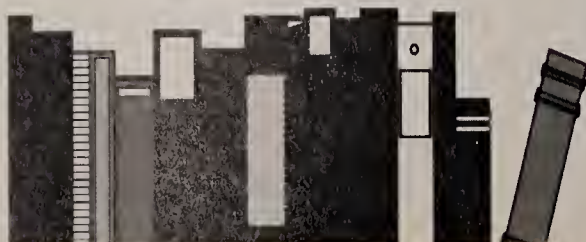
COMPUTERWORLD
**FALL
Campus
Edition**



Issue:
October 31, 1997

Advertising Deadline:
September 17, 1997

1-800-343-6474, x8000



project manager
database administrator
data analyst
NT consultant
technical specialist
project leader
NT specialist
programmer analyst
MS certified trainer
project manager - year 2000
database administrator
unix systems administrator



<http://careers.computerworld.com>

Member of Technical Staff responsible for the architecture, design and implementation of system software for a graphics/video chip. Will be a member of the chip architecture team and provide technical leadership in the design and implementation of the video processing software. Requirements are a Bachelor's Degree in Computer Science or Electrical Engineering plus 1-1/2 years experience in the job offered or 1-1/2 years experience in the design, development & maintenance of display driver software for graphics and video accelerators for the Microsoft Windows environment. Background in developing software for IBM PC platforms using C and Intel x86 assembly languages is also required. 40 hr work week: 8:15 am to 5:00 pm, M-F. Salary: \$93,017.60 per yr. Send 2 copies of your resume to Case #70734, P.O. Box 8968, Boston, MA 02114. E.O.E. Applicants must be U.S. workers eligible to accept employment in the United States on a full-time basis.

BANKING CONTRACTORS & PERMS

300 NATIONWIDE
OPPORTUNITIES!

RESPONSE TIME, Inc.

2771-29 Monument Road

Suite 326

Jacksonville, FL 32225

P: 904-620-0999

F: 901-620-0054

"THE
BANKING
SPECIALISTS"

SOFTWARE ENGINEER

Duties: Design, develop and test computer programs for business applications; analyze software requirements of determine feasibility of design; direct software system testing procedures using expertise in Powerbuilder 4.0, Oracle 7.0, Gupta SQL, Er-Win and Unix Operating Systems. **Requirements:** Bachelor's Degree in Engineering, Computer Science or related field, 5 years experience as Software Engineer or Computer Programmer, or Masters Degree and 3 years experience. **Knowledge of:** Powerbuilder 4.0, Oracle 7.0, Gupta SQL, Er-Win and Unix Operating Systems. **Salary:** \$55,000. **Working Conditions:** 8 a.m. to 5 p.m., 40 hours/week. **Apply:** PA Job Center, 10 Paluso Drive, Box 210, Charleroi, PA 15022. No. 9071222.

CONTRACTS UP
TO \$65/HR.

Contract positions available in VA, CA, TX, and OK
• PEOPLESOFT
• SAP DEVELOPERS
• ADABAS/NATURAL II
• ORACLE DEVELOPERS
• IMS DB/DC, PL/1, COBOL
• COBOL, CSP, DB2, CICS
• UNISYS A SERIES, LINC, AGOL
• POWERBUILDER
• LOTUS NOTES
• FOCUS
• AS/400, JD EDWARDS
• SAS
No trainees!
Referral Bonus - \$1,000
H1 Candidates Welcome

JPS, Inc.
P.O. Box 692281, Houston, TX
77269 Ph: 1-800/633-0391
Fax: 1-800/963-3039
e-mail: jps2281@aol.com

Three Software Engineers sought to design and develop customized computer software systems for clients in a client/server environment. Consult with hardware engineers to evaluate interface between hardware and software. Determine systems feasibility. Develop and direct software system testing procedures, programming and documentation. Applicants must have a Bachelor degree in Computer Science, Engineering or a related field plus 5 years experience in the job offered or in design and development of client/server applications. Such experience must include C, UNIX, a relational database and Windows. Hours: M-F, 8-5; 40 hrs/wk. Salary \$70,000/yr. Must be willing to travel to various client sites throughout the U.S. and to commute within 60-mile radius of home. If interested please send two resumes to Case # 70701, PO Box #8968, Boston, MA 02114.

SOFTWARE ENGINEER

Duties: Design, develop and test computer programs for business applications; analyze software requirements to determine feasibility of design; direct software system testing procedures using expertise in VAX-RDB, DEC Forms, Datatrieve, VAX Cobol and VAX Basic. **Requirements:** Bachelor's Degree or equivalent in Mathematics, Physics, Computer Science or related field, 3 years experience as Software Engineer or Computer Programmer, knowledge of VAX-RDB (database management system for Digital VAX hardware), DEC Forms (software), Datatrieve (data management tool), VAX Cobol and VAX Basic (languages). **Salary:** \$49,000. **Working Conditions:** 8 a.m. to 5 p.m., 40 hours/week. **Apply:** PA Job Center, 2103 Ninth Avenue, Beaver Falls, PA 15010. No. 8025078.

Software engineer with three years of experience as a s/w engineer or computer professional, who will develop s/w systems, applying computer science, engineering, and mathematical analysis, with three years of experience using UNIX, INFORMIX, ESQ/C and at least one year experience with HP 9000. Analyzes s/w reqs. and performs testing and user training after development. Extensive travel and frequent relocation. Bachelor's degree in engineering, mathematics, computer science or physics. \$75,000/yr. 40 hours/wk., 9:00 - 5:00. Send resumes, listing job order number 8025110, to: Mr. Greg Schwing, Mgr. Office of Employment Security, 2100 Wharton St., Pittsburgh, PA 15203.

Software engineer with two years of experience as a s/w engineer or computer professional, who will develop s/w systems, applying computer science, engineering, and mathematical analysis, with two years of experience using SAP R/2, SAP R/3, and ABAP/4. Analyzes s/w reqs. and performs testing and user training after development. Extensive travel and frequent relocation. Bachelor's degree in engineering, mathematics, computer science or physics. \$120,000/yr. 40 hours/wk., 9:00 - 5:00. Send resumes, listing job order number 1012526, to: Mr. Steve Fera, ACTG MGR., Office of Employment Security, 3 Kensington Square, New Kensington, PA 15068.

Software engineer with one year of experience as a s/w engineer or computer professional, who will develop s/w systems, applying computer science, engineering, and mathematical analysis, with one year of experience using UNIX, SYBASE, C, and GUI. Analyzes s/w reqs. and performs testing and user training after development. Extensive travel and frequent relocation. Bachelor's degree in engineering, mathematics, computer science or physics. \$50,000/yr. 40 hours/wk., 9:00 - 5:00. Send resumes, listing job order number 5012341, to: Mr. Terry Kinney, Manager, Office of Employment Security, 1270 N Water St., PO Box 759, Kittanning, PA 16201.

Software engineer with two years of experience as a s/w engineer or computer professional, who will develop s/w systems, applying computer science, engineering, and mathematical analysis, with two years of experience using C++ and UNIX and an additional 1 year experience with SQL Server and Powerbuilder. Analyzes s/w reqs. and performs testing and user training after development. Extensive travel and frequent relocation. Bachelor's degree in engineering, mathematics, computer science or physics. \$68,000/yr. 40 hours/wk., 9:00 - 5:00. Send resumes, listing job order number 9071178, to: Mr. Duane M. Brentzel, Mgr. Office of Employment Security, 599 Sells Lane, Greensburg, PA 15601.

spearhead™

SAP

PROFESSIONALS

Fast-growing national and international consultancy
with a reputation for first-class consultant offers
**WORLD-WIDE CAREER OPPORTUNITIES FOR
TOP QUALITY PROFESSIONALS**

CURRENTLY STAFFING PROJECTS IN:

US, Canada, South America, Pacific Rim and Europe:
especially in these skills and industries: FI/CO, Basis, ABAP/4, PM, MM,
WM, PP, SD, EDI in SAP Environment, Supply Chain/Manufacturing,
Utilities and Retail Experience in a SAP Environment.

Sales: US based positions available in both national/international sales
for experienced professionals.

Recruiting: Positions available in our New York City area offices for
experienced technical recruiters.

**Competitive compensation with performance incentives;
comprehensive benefits package.**

▲ EXPERIENCED PROJECT MANAGERS \$ 180K +
▲ TEAM LEADERS \$ 150K +
▲ CONSULTANTS \$ 100K +

Send Resumes to the Attention of David Epperly

spearhead™

SPEARHEAD SYSTEM CONSULTANTS (US) Ltd.

99 Seaview Blvd., Suite 340, Port Washington, NY 11050 • voice 516-625-9000, fax 516-625-9687
55 Broad St., Suite 13F, New York, NY 10004 • 212-968-1346, 212-968-1348, fax 212-968-1352
e-mail david.epperly@spearhead.com • www.spearhead.com
1.888.spearhead
SAP™ National Implementation Partner

OPPORTUNITIES IN SAUDI ARABIA

BDM International, Inc., a premier professional and technical services firm with established programs worldwide, has two-year assignments in Riyadh, Saudi Arabia that are accompanied tours and provide an excellent international compensation package, including housing, transportation, dependent schooling and liberal benefits. We are looking for the following professionals with at least eight years IT experience. U.S. citizenship is required.

**QUALITY ASSURANCE ANALYST
ORACLE DBA
LAN ADMINISTRATOR
POWERBUILDER (SENIOR SYSTEMS ANALYST)
COMMUNICATIONS SPECIALIST**

If you are seeking a challenge and meet our selection criteria, please send your scannable chronological resume to: BDM Enterprise Management Services, Attn: Gulf Operations, Dept. CW104, 12150 East Monument Drive, Suite 510, Fairfax, VA 22033-4053. E-mail: tcarpent@bdm.com (please include Dept # in "subject" line). Fax (using fine mode): (703) 383-5216. EOE.

BDM
GULF OPERATIONS
A Division of BDM International Inc.

International Information Technology, Inc.

EXCITING PEOPLESOFT CONSULTING OPPORTUNITIES NATIONWIDE

International Information Technology, Inc. is looking to expand our rapidly growing PeopleSoft consulting team nationwide. IIT is a PeopleSoft Business Partner and Distributor internationally. We offer extremely competitive compensation packages and great opportunities with a creative, innovative work environment.

Potential team members should have experience with either PeopleSoft HRMS or PeopleSoft Financials on a technical and functional level.

For immediate consideration mail, fax or e-mail your resume to:
International Information Technology, Inc.
Three Bayside Village Place, Suite 419, San Francisco, CA 94107
Fax: 888-442-2004
E-mail: ckenny@iit-net.com
http://www.iit-net.com

BUSINESS
PEOPLE
SOFT
PARTNER

Beyond the Suit.

All the big consulting firms will give you the same pitch. And the same not-so-fast track. That's why we left those big consulting firms years ago to form our own: Clarkston•Potomac.

It's not what you wear.

It's what you do.

Clarkston•Potomac is a fast-growing, entrepreneurial information technology consulting firm. We help clients with IT strategies, project management, business process reengineering, systems design, development and integration, and organizational change management. We specialize in IT Planning, implementing enterprise-wide packages like SAP, and Sales Automation consulting.

At Clarkston•Potomac you can express yourself, be creative, practice consulting with integrity, quality and professionalism. We're looking for top-notch professionals with a Bachelor's degree, a willingness to travel and prior consulting experience in any of the following areas:

- SAP
- Baan
- Strategic IT Planning
- Sales Automation
- Change Management/Training
- Client/Server Development

CLARKSTON POTOMAC

Mid Market Strategies & Solutions

If you're interested, please fax, mail or e-mail your resume to:
Clarkston•Potomac, Attn: Recruiting Director
2605 Meridian Parkway, Suite 100
Durham, NC 27713
FAX: 919.484.4450
E-mail: Recruiting@clarkstonpotomac.com
www.clarkstonpotomac.com

©1997 Clarkston-Potomac Group, Inc.

SAP

We specialize in:

The placement of SAP professionals - all modules, ABAP, BASIS.

Contract & Permanent Positions Available Nationwide.

We have low overhead so we can pay you top rates.



People Unlimited

1811 Sardis Rd. N., Ste. 210
Charlotte, NC 28270
Phone: 704-841-1135
Fax: 704-845-1052

SOFTWARE ENGINEER

Duties: Design, develop and test computer programs for business applications; analyze software requirements to determine feasibility of design; direct software system testing procedures using expertise in IDMS, CICS, VS Cobol II, ADS/O and Xpediter. **Requirements:** Master's Degree in Physics, Computer Science or related field, 2 years experience as Software Engineer or Computer Programmer, knowledge of IDMS (network database management system), VS Cobol II (language), CICS, ADS/O and Xpediter (tools). **Salary:** \$67,000. **Working Conditions:** 8 a.m. to 5 p.m., 40 hours/week. **Apply:** PA Job Center, 1051 Morell, Box 868, Connellsville, PA 15425. No. 802S054.

Software engineer with three years of experience as a s/w engineer or computer professional, who will develop s/w systems, applying computer science, engineering and mathematical analysis, with three years of experience using Oracle, Developer 2000, SQL*Plus, SQL*Forms, SQL*Reportwriter, PL/SQL and some experience with Oracle Financials. Analyzes s/w reqs. and performs testing and user training after development. Extensive travel and frequent relocation. Master's degree in engineering, mathematics, computer science or physics. \$67,000/yr. 40 hours/wk., 9:00 - 5:00. Send resumes, listing job order number 802S111, to: Mr. Vince Mezeivitch, Mgr. Office of Employment Security, 345 Fifth Ave., McKeesport, PA 15132.

<http://careers.computerworld.com>



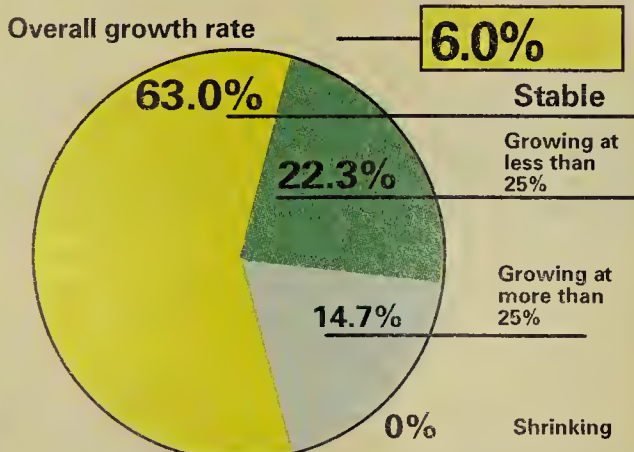
Find training now.

ALL YOU NEED IS INTERNET ACCESS • **FREE SEARCHING** • NO CHARGE TO SEARCH THE DATABASE!

**CAREER
AGENT**
careeragent.COMPUTERWORLD.com

Career Survey: Photonics

Industry Hiring Trends

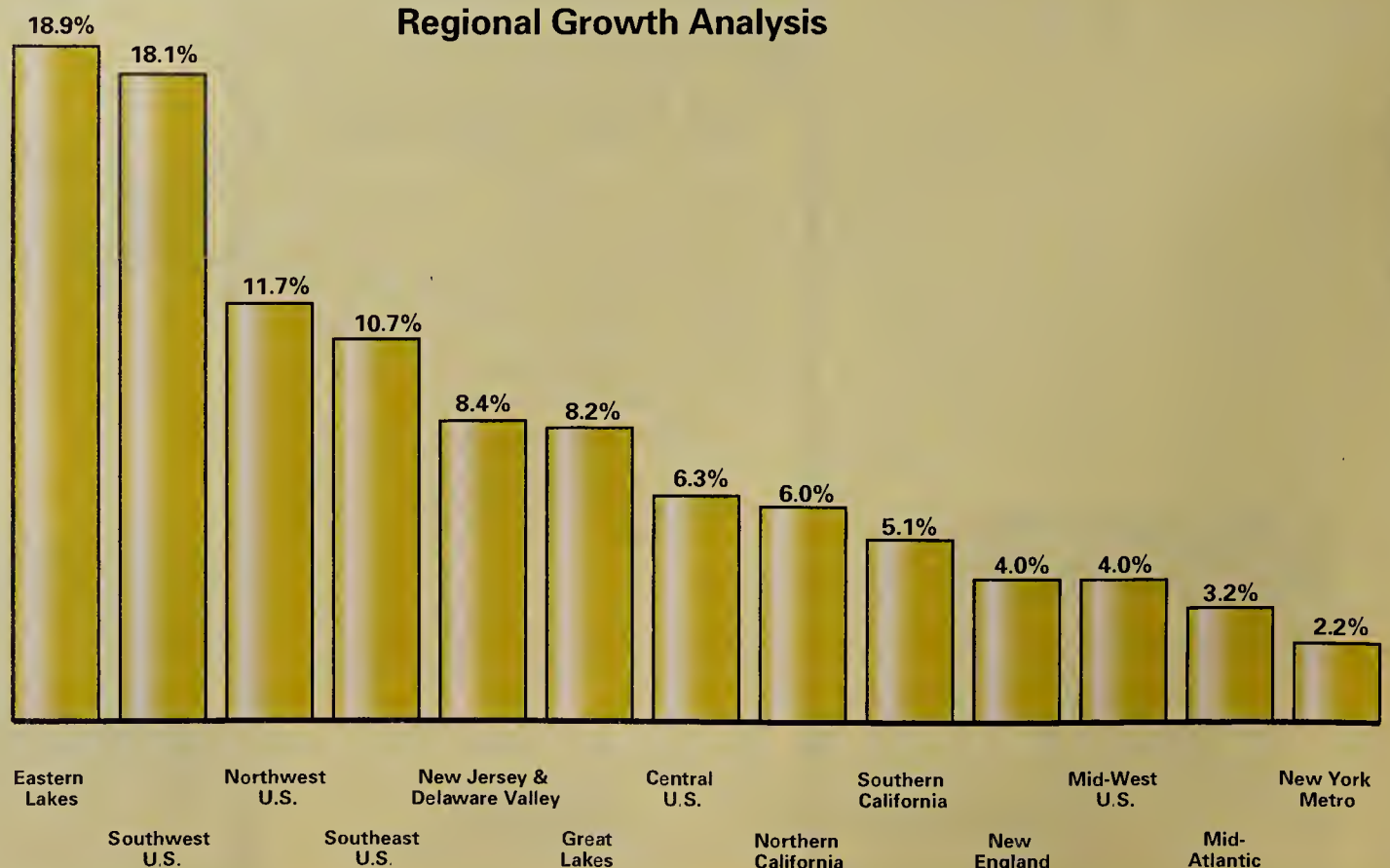


Survey Base: 211 Technology Firms involved in Photonics

Survey conducted between April '97 and June '97

CorpTech, a directory publisher in Woburn, Mass., tracks the U.S. 45,000 technology manufacturers. This survey relates to the 31,327 tracked firms with fewer than 1,000 employees.

Regional Growth Analysis



Marketplace

NEW & NOTABLE

For information on
advertising,
call 203-857-5100

Count down to the Year 2000

Unique Watch "Count
Down" the Hours, Minutes,
and Seconds to the year 2000

With less than 1000 days left to the year 2000, excitement is growing as we approach a new millennium—a momentous occasion that happens only once every forty generations. Famous resorts, exclusive hotels, cruise lines and banquet halls all over the world are already booked in anticipation of



this spectacular event in world history. To usher in the new millennium with precision and style, Branco International is offering the *Count Down™* watch. This forward-looking watch not only tells regular analog time but counts down the hours, minutes and seconds digitally to the year 2000. What's more, the watch can count down to any other special date such as a birthday, anniversary, wedding, graduation, retirement or due date.

The futuristic dial of the *Count Down™* watch shows the three globes of the sun, earth and moon, symbolizing time. The watch is available in black or white, features

3 Quartz ATM and fine Swiss movements, a stylish padded leather band and comes attractively packaged. In order to help make the world a better place in the next millennium, a portion of the profits from the *Count Down™* watch is donated to nonprofits internationally.

The *Count Down™* watch is available exclusively through Branco International, Inc. for \$79.95 plus shipping and handling. To order, contact Branco, 91 Main Street, Kings Park, NY 11754, 1-800-528-7445, 516-544-4604, Fax: 516-544-4145.

TAC Systems' FAXfree software enables users to send color faxes over the Internet for little or no cost

TAC Systems, Inc. announced the addition of color capabilities to their FAXfree software. FAXfree enables Internet users to send color faxes anywhere in the world at little or no cost. Developed for Windows 95, "FAXfree on the Internet" offers the convenience of conventional fax systems without the associated long-distance phone charges. FAXfree transmits scanned color images

and photographs, charts, and other traditional facsimile information to Internet e-mail addresses. Faxfree at a one time \$49.95 expense, costs less than long-distance fees charged for sending just a few international faxes. A black-and-white version of FAXfree Personal is available for \$29.95. A powerful server version which enables multiple users to send faxes over company networks will be

released this summer. TAC Systems also offers FAXfree Portal. Available for \$1,295 Faxfree Portal connects fax machines to the internet. TAC Systems, Inc., based in Huntsville, Alabama, was founded in 1991. The company specializes in solutions for leveraging information and communications in computer networks. TAC Systems' product line includes data storage peripherals and

software that optimizes network information access, retrieval, and transmission.

Contact: Candice Dunaway TAC Systems, Inc. at (205) 721-1976, or e-mail cdunaway@tacsystems.com, or www.tacsystems.com



TECHNO

O Y S

WIN EVERY WEEK!

Computerworld Marketplace TechnoToys Sweepstakes

July 14 TechnoToy: APC® Back-UPS® Office™

Protect your entire computing environment with this multi-path uninterruptible power supply. Features instant battery power, surge and internet protection for your PC.

Win 1 of 2 being given away!



By entering into the weekly TechnoToys giveaway, your name will automatically be entered into the year-end Super Prize Sweepstakes where you could win as much as **\$25,000 IN CASH!**



COMPUTERWORLD
The Newsweekly for Information Technology Leaders

Fax this completed form, or all of the following information to: (800) 898-2299.

Yes, I want to enter to win a APC Back-UPS Office. Please also enter me in the end-of-year 1997 Super Prize Sweepstakes Drawing.

Name: _____

Title: _____

Company: _____

Address: _____

City: _____ State: _____ Zip: _____

Phone: _____

Fax: _____

email: _____

Are you currently a Computerworld subscriber?

yes _____ no _____

Issue Date: 7/14/97

No purchase necessary. All entries must be received no later than 11:59 am (EST) Mon., July 21, 1997. Winner will be determined in a random drawing on or about 5:00 pm (EST) Mon., July 21. See official rules within the Marketplace section.



Out-of-Box Experience

It's a philosophy — just plug in your GATEWAY™ PC and go to work. PCs custom built to your specifications, shipped directly from the manufacturer help increase your end-users' productivity. That's what we mean by enhancing your "out-of-box" experience. It's part of Gateway 2000 Major Accounts, Inc.'s Custom Integration Services (CIS).

With CIS, a host of hardware and software applications can be custom built into your PCs, even components other than Gateway's standard offering. You can get that hardware or software pre-tested and shipped directly to your door — no third parties, no wasting your technician's time installing software or making alterations after your PCs are built. Plus, you benefit from toll-free, dedicated technical support and customized service options.

Gateway products deliver Value of Ownership by combining maximized benefits and reduced costs over the life cycle of your PCs. "Value" is much more than the cost of the product; it's the right balance of quality, performance, manageability, service *and* life cycle cost.

Call our Gateway Major Accounts representatives today and let them elevate *your* out-of-box experience.



8 8 8 - 8 8 8 - 0 3 8 2

www.gateway.com/majoract/majoract.htm

Gateway 2000 Major Accounts, Inc.

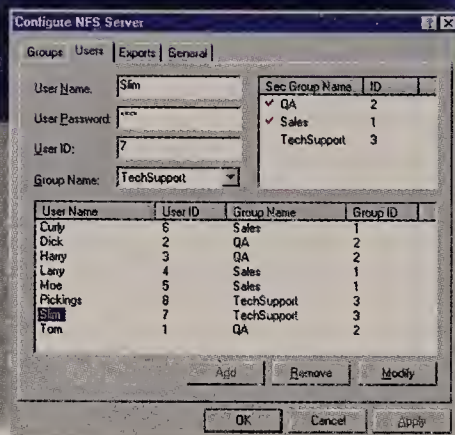
©1997 Gateway 2000, Inc. GATEWAY 2000, "G" logo, black-and-white spot design and "You've got a friend in the business." slogan are registered trademarks, and GATEWAY is a trademark of Gateway 2000, Inc. All other brands and product names are trademarks or registered trademarks of their respective companies. Gateway 2000 Major Accounts, Inc. is a wholly owned subsidiary of Gateway 2000, Inc.

Marketplace

For information on
advertising,
call 203-857-5100

Distinct IntraNet Servers™

The Easiest Way to Manage Users and Network Resources



Highlights:

- Includes all major TCP/IP based file and printer servers in a single package: NFS Server, FTP Server, LPD, TFTP and BOOTP.
- Integrates seamlessly into Windows 95 and Windows NT
- Password protected login for all servers
- Also available for Windows 3.1.

**Free
Evaluation Copy
Available at...**



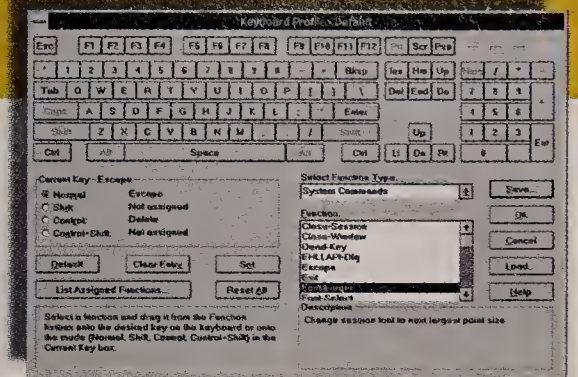
distinct
The world leader in Internet development tools.

<http://www.distinct.com>
sales@distinct.com
Phone: 1-408-366-8933
Fax: 1-408-366-0153

Distinct is a registered trademark and Distinct IntraNet Servers is trademark of the Distinct Corporation. Copyright 1997 Distinct Corporation, 12900 Saratoga Avenue, Saratoga, CA 95070. All rights reserved. Specifications and terms are subject to change without notice.

Distinct IntelliTerm™

Integrated Terminal Emulator for DEC and IBM® Systems



Highlights:

- TN3270 Emulation—Models 2,3,4 and 5 (for IBM Mainframes)
- 3179G Vector Graphics & 3279S3G
- TN5250 (24x80, 27x132) (for AS/400)
- VT52, VT100, VT220, VT320 & VT420 emulation (for DEC and UNIX Systems)
- Customizable keyboard layouts, poppads and session profiles
- VBA™ Advanced Scripting Language
- DDE, HLLAPI, EHLLAPI, WinHLLAPI and Visual Basic™
- Available for Windows 3.11, Windows 95 and Windows NT

**Free
Evaluation Copy
Available at...**



distinct
The world leader in Internet development tools.

408.366.8933
<http://www.distinct.com>
Fax: 408.366.0153
E-mail: cworld@distinct.com
Fastfacts: 408.366.2101

Distinct is a registered trademark and Distinct IntelliTerm is trademark of the Distinct Corporation. Copyright 1997 Distinct Corporation, 12900 Saratoga Avenue, Saratoga, CA 95070. All rights reserved. Specifications and terms are subject to change without notice.

Looking For The **BEST** Company To Give You The **BEST** Value In IBM Computer Hardware?

We're IBM Experts:

- RS/6000
- ES/9000
- AS/400
- Series/1
- PCs
- Networks & Integration

Sales & Rentals

- ✓ Processors
- ✓ Peripherals
- ✓ Upgrades
- ✓ New
- ✓ Reconditioned
With warranty



- Product Specialists
- Pretested equipment
- Flexible financing
- Configuration planning
- Offices nationwide
- Technical support
- Overnight shipping



<http://www.dempseybus.com>
e-mail: dempsybus@dempseybus.com

Dempsey
BUSINESS SYSTEMS

2136 Michelson Drive · Irvine, CA 92612-1304
Phone: (714) 475-2900 Fax: (714) 475-2929

Buy • Sell • Rent (800) 888-2000

NetCom 3™ Connectivity Without Clutter.



Winner



DESIGNED FOR
COMPUTER EQUIPMENT
AND ACCESSORIES,
NETCOM3 IS BUILT
TO MAXIMIZE
WORKSPACE AND
IMPROVE OPERATOR
PRODUCTIVITY.



CORPORATE HEADQUARTERS
2550 WEST MIDWAY BLVD.,
BROOMFIELD, COLORADO 80020
TEL: 303/465-2800
SALES LINE: 800/4321-EDP
SALES FAX: 800/EDP-3490

A product of
edp
engineered
data products
INCORPORATED

Linking People and Technology.

EDP EUROPE LTD.
43 REDHILLS ROAD,
SOUTH WOODHAM FERRERS,
CHELMSFORD, ESSEX CM35UL
TEL: (44) 1245-322380
FAX: (44) 1245-323484
WEB SITE: WWW.EDP-USA.COM

For information on
advertising,
call 203-857-5100

Marketplace

AS/400's LOWEST PRICES IN THE U.S.A.!!!

BUY ★ SELL ★ LEASE ★ RENT ★ UPGRADE

KING DATA STOCKS ...

Over 10 Million Dollars of New & Used IBM Hardware

- All Portable AS/400-236, 436, 150 Models
- All Advance Series-200, 300, 400, 500 & 600 Models
- All AS/400-9402/9404/9406-B, C, D, E and F Models

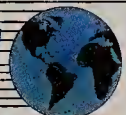
SYSTEMS ★ FEATURES ★ PARTS

Disk Drives • Tape Drives • Memory • Printers

Display Stations • Modems • Controllers

KING DATA BUY \$ IBM \$ \$ \$ \$
NOBODY PAY \$ HIGHER CASH!!!

**KING
DATA**



DELIVERS WORLDWIDE
SAME DAY • OVERNIGHT • ANYWAY
WORLDWIDE INSTALLATION

1-800-330-4426

TEL: (203) 579-1000 FAX: (203) 579-1100
E-MAIL: INFO@kingdata.com

"THE WORLD'S MOST INFORMATIVE AS/400 WEB SITE"

www.kingdata.com

ALICOMP

Which has serviced over 175 diverse clients,
specializes in providing VM, MVS, VSE service to clients who need:

- OUTSOURCING
- REMOTE COMPUTING
- YEAR 2000: Mainframe Conversion Test Environment
- TAPE CONVERSIONS
- SYSTEMS INTEGRATION CONSULTING

Industry
experience
includes:

• Financial Services • Non Profit • Software Developers
• Healthcare • Manufacturing/Distributing • Publishing

We are the "Boutique" of the Computer Services World

Serving Clients since 1980

(201) 319-8787 • (800) 274-5556

OFFICIAL RULES - NO PURCHASE, PAYMENT OR CONTRIBUTION NECESSARY - To enter the Sweepstakes outlined below, follow all entry instructions published in this offer. Your entry must be received by the date specified elsewhere in this offer or by 1/15/98, whichever is sooner.

Super Prize Sweepstakes - Winners will be selected in random drawings from all eligible entries received. Early Bird winner will be selected in a separate drawing from among all eligible entries. Sweepstakes begins 9/3/96. Drawings will be conducted on or about 4/30/98 by Ventura Associates, Inc., an independent judging organization whose decisions are final. Drawing will be held at 1040 Avenue of the Americas, New York, NY 10018. You need not be present to win.

CONSUMER DISCLOSURE Different creative presentations of the sweepstakes may present different prize choices. Values at a given prize level will be approximately the same. All prize winners will have the option of selecting any prize offered at level won. Number, estimated maximum retail value and odds of winning each prize are as follows: 1 Grand Prize - \$25,000 (or cash alternative of \$25,000); 1 First Prize - \$2,000; 1 Second Prize - \$1,000; 50 Third Prizes - \$80; 1,000 Fourth Prizes - \$65 each; 1 Early Bird Prize - \$5,000. Total prize value: \$102,000.00. Certain creative presentations of the Super Prize Sweepstakes may present an Early Bird Prize. To qualify for the Early Bird Prize, if the Early Bird Prize is presented in your offer, your entry must be received by the Early Bird date specified elsewhere in this offer. Odds of winning any prize are determined by the total number of eligible entries received. Distribution of sweepstakes will not exceed 300 million. All Super Prize Sweepstakes prizes will be awarded.

Automobile, boat/trailer prizes must be picked up at local dealer. All other merchandise prizes will be shipped to winner. Boat/trailer and/or automobile title, tags, license and registration fees are winner's responsibility as are any other incidental expenses not specified in the offer. Trip prizes subject to availability and must be completed within 12 months of date awarded. Actual values of trips depend on location of winners and fares at time of departure. Certain restrictions and blackout dates may apply. If a trip prize is won by a minor, minor must be accompanied by a parent or legal guardian. Winner's traveling companion will be required to sign a release of liability prior to departure. Trip prizes are on a space available basis and do not include personal purchases or incidentals. No substitution of prizes, except sponsor reserves the right to substitute a prize of equal or greater value in the event an advertised prize is unavailable.

For winners list (available after 6/30/98) send self-addressed, stamped envelope by 1/15/98 to: Super Prize Winners, P.O. Box 9193, Medford, NY 11763-9193.

THE FOLLOWING APPLIES TO THE SWEEPSTAKES ABOVE - No purchase, payment or contribution necessary to enter or win. No photocopied or mechanically reproduced entries will be accepted. Not responsible for technical malfunctions, failure of computer, telephone equipment or software, inaccurate transmission of entry information or for lost, late, misdirected, damaged, incomplete, illegible or postage-due mail. All entries become the property of sponsors and none will be returned.

Winner notification will be by mail. A winner may be required to sign and return an Affidavit of Eligibility/Liability/Publicity Release within 14 days of date printed on notification or he/she will be disqualified. Any prize/prize notification returned as undeliverable will result in disqualification. If a major prize is won by a minor, it will be awarded to parent or legal guardian and the Affidavit of Eligibility and Release must be signed by the parent or legal guardian. Except where prohibited by law, winners consent to the use of their names, hometowns, likenesses and photographs for advertising and publicity without additional compensation.

Sweepstakes is open to legal residents of the U.S., Canada and Europe (in those areas where made available) who have received the offer. In the event that the designated recipient of the offer has moved, the offer may not be valid in the state, country or province to which the offer has been forwarded. Void in Puerto Rico and where prohibited by law. All federal, state, provincial and local laws and regulations apply.

All prize values are in U.S. currency. No transfer of prize permitted. A winner is responsible for all taxes on his/her prize.

Canadian residents, in order to win, must first correctly answer a time-limited skill testing question administered by mail. Any litigation regarding the conduct and awarding of a prize in this publicity contest by a resident of the province of Quebec may be submitted to the Regie des alcools, des courses et des jeux.

Sweepstakes may be presented in different creative presentations by different organizations. Ventura Associates, Inc., 1040 Avenue of the Americas, New York, NY 10018, the independent judging organization has provided all prizes at no charge. Ventura Associates, Inc., reserves the right to withdraw the promotion if it becomes technically corrupted.

Custom Application Development

Extensive Experience & Competitive Rates

INDUSTRY EXPERIENCE

- Aviation and transportation;
- Oil & Gas
- Space (Guidance and control systems);
- Power and Automotive;
- Banking;
- Insurance.

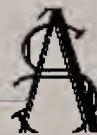
CAPABILITIES

- Problem analysis and advanced software architecture development;
- Optimization and mathematical modeling;
- Artificial intelligence infusion and applications;
- Advanced software systems development and system integration and re-engineering;
- Advanced programming services.

SKILLS

- Platforms
 - IBM Mainframes
 - IBM Compatible PCs
 - Unix Workstations
 - Sun/Solaris Workstations
- Programming Languages
 - C, C++, Assembler,
 - Pascal, Clipper 5.X, PL/1
 - Smalltalk, SQL, Adabas/Natural,
 - VHDL, Cobol
- Architecture
 - Client/Server, Open Systems
 - Distributed Cooperative Processing,
 - On-line Transaction Processing
 - Batch Processing
- Operating Systems
 - MS DOS, all version of Windows,
 - OS.2, Unix
- Networking
 - LAN, WAN, TCP/IP, X.25, Novell Netware
- Data Management
 - Oracle, DB2, VSAM, MS Query
- Software Design
 - Object-Oriented Methodologies

MOTTO



— 100% Customer Satisfaction 100% of the Time —

AKVA SOFT, INC.

314 Commerce St., Alexandria, Virginia 22314

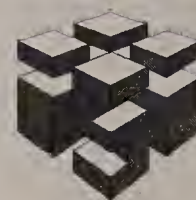
Tel: (703) 299-0804/05 E-mail: akvasoft@erols.com Facsimile: (703) 684-6971

Off-shore custom programming Local custom project management

600 experienced, degreed, programmers in India complete projects at 25-50% less cost. On-site project managers ensure applications deliver the results you need. To get you what you need, our project managers:

- Over-plan • Over-communication • Over-engineer • Over-test • Over-deliver

We deliver your documentation first to ensure your application does what you want, in the way that you need it — before the coding begins. Experienced in mainframes, client-servers and PCs. Everything from retail and direct mail to financial and manufacturing, and, of course, Year 2000.



Intelligent Systems

301-840-9563 <http://www.intelligentsys.com>

Employees of Sweepstakes Administrator, presenting organizations, their advertising agencies and promotional companies involved in this promotion and their families, agents, successors and assignees are ineligible to participate in the promotion and shall not be eligible for any prizes covered herein. The parties hereto acknowledge that SCA is not liable for any prize awards payable to promotion participants in violation of this term.

COMPUTERWORLD TECHNO TOYS WEEKLY SWEEPSTAKES OFFICIAL RULES: No purchase necessary. Complete official entry form or print all entry information on plain paper, including this week's prize and fax to: (800)898-2299. Incomplete entries not eligible. Sweepstakes begins 12:01 am (EST) Monday (the date of the issue). All entries must arrive by fax no later than 11:59 am Monday of the following week. The issue date can be found at the top of most pages of this magazine. Sponsor not responsible for telephone or fax equipment failure or delayed transmission. All entries become sponsor's property & will not be returned.

Winner will be determined in a random drawing on or about 5:00 pm (EST) the Monday following the issue date. You need not be present to win. The prize (and its retail value) detailed with the entry form is guaranteed to be awarded & delivered to winner approx. 30 days from drawing date. If notification letter or prize is returned as undeliverable, it will be awarded to an alternate winner at random. No prize substitutions except due to unavailability, in which case a prize of equal value will be awarded. Prize not transferable or redeemable for cash. All taxes on prize are winner's responsibility. Acceptance of prize constitutes permission (except where prohibited) to use winner's name, hometown & likeness for promotional purposes without additional compensation.

Sweepstakes is open to legal US residents, 18 & older. Odds of winning determined by total number of entries received. Est. distribution: 150,448. Sponsor: Computerworld, Inc. 500 Old Connecticut Path, Framingham, MA 01701. Employees of Computerworld, Inc., its affiliates, subsidiaries, retailers, advertising & promotion agencies & immediate families of each not eligible. All federal, state & local laws & regulations apply. Void in Puerto Rico & where prohibited by law.

For winners list (available within 4 weeks of the drawing), send a SASE to: Sweepstakes Winners, Computerworld TechnoToys Sweepstakes, 500 Old Connecticut Path, Framingham, MA 01701.

The Week in Stocks

Gainers



Losers



PERCENT

Control Data Systems Inc.	36.3	Wall Data Inc.	-31.9
NetManage Inc.	35.5	Radius Inc.	-20.0
Yahoo! Inc.(H)	33.6	Truevision Corp.	-19.4
Amazon.com	24.8	Banyan Systems Inc.	-16.3
Red Brick Systems Inc.	24.5	MCI Communications Corp.(H)	-14.7
DSC Communications	21.0	Open Market Inc.	-14.2
Keane Inc.(H)	18.6	Forte Software	-11.9
Micrel Semiconductor Inc.(H)	17.8	Secure Computing Corp.	-11.3

DOLLAR

Compaq Computer Corp.(H)	14.81	Wall Data Inc.	-8.63
Dell Computer Corp.(H)	13.31	MCI Communications Corp.(H)	-6.25
Yahoo! Inc.(H)	11.25	Bell Atlantic Corp.	-4.00
Keane Inc.(H)	10.13	Nynex Corp.	-3.06
Texas Instruments	8.88	Sprint Corp.	-2.13
Micrel Semiconductor Inc.(H)	8.63	American Mgmt. Systems	-2.00
Intel Corp.	7.06	Open Market Inc.	-1.81
America On-Line(H)	6.88	Policy Management Sys.	-1.56

INDUSTRY ALMANAC

Analysts strong on Seagate

After issuing two warnings last month of lower-than-expected quarterly revenue and earnings, Seagate Technology, Inc. (NYSE: SEG) released a report last week that lived up to its billing.

Revenue was \$1.98 billion, and earnings were 23 cents per share, compared with \$2.01 billion in revenue and earnings of 42 cents per share for the same quarter last year. Net income was \$59 million, compared with \$101 million for the same quarter last year. Seagate cited weak demand for high-end products.

But the blue news had little effect on at least two financial analysts, who still back the hard drive maker as a long-term performing stock and are recommending it to investors.

Both analysts say Seagate's performance should improve by year's end with strong growth in market demand.

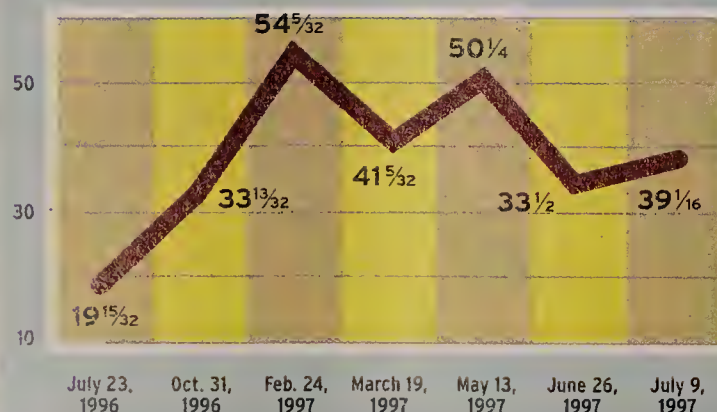
"I don't think investors should be overly concerned about the short term," says Jean W. Orr, an analyst at A. G. Edwards in St. Louis. "The demand for growth continues to be very strong, and I think Seagate is very well-positioned and actually will be an industry leader for years to come."

Michael Geran, vice president of the Pershing division at Donaldson, Lufkin & Jenrette Securities Corp. in Jersey City, N.J., says, "This company has a history of cyclical growth. It surges, goes flat and surges again."

Both analysts say Seagate wasn't able to meet demand for drives last year. It rectified the problem earlier this year, only to find demand lagging at the high end. That might have been because Western Digital Corp. (NYSE: WDC) in Irvine, Calif., moved into the high-end storage components business, slowing "Seagate's growth rate ... from superlative to normal," Geran says. — Matt Hamblen

SEAGATE'S UPS AND DOWNS

Seagate has had a roller-coaster year, but analysts expect improvements during the next six months



EXCH 52-WEEK RANGE JULY 11 2 PM Wk NET Wk Pct

Communications and Network Services UP 1.89%

COMS	81.38	24.00	3 COM CORP.	54.50	6.63	13.8
AIT	71.75	49.63	AMERITECH CORP.	69.50	-0.38	-0.5
ASND	80.25	36.13	ASCEND COMMUNICATIONS	47.94	-1.06	-2.2
T	42.63	30.75	AT & T	35.13	-0.88	-2.4
BNYN	7.88	1.19	BANYAN SYSTEMS INC.	2.25	-0.44	-16.3
BAY	30.63	15.38	BAY NETWORKS INC.	27.75	0.19	0.7
BEL	78.25	55.13	BELL ATLANTIC CORP.	71.56	-4.00	-5.3
BLS	48.69	35.25	BELLSOUTH CORP. (H)	46.69	-0.94	-2.0
BRKT	42.25	9.25	BROOKTROUT TECHNOLOGY	10.63	0.38	3.7
CS	46.50	26.50	CABLETRON SYSTEMS	32.94	2.25	7.3
CGRM	17.50	8.63	CENTIGRAM COMMUNICATIONS	12.75	-0.75	-5.6
CSCO	77.25	44.75	CISCO SYSTEMS INC. (H)	75.38	3.81	5.3
CMNT	7.50	3.75	COMPUTER NETWORK TECH. (L)	4.06	-0.06	-1.5
DIGI	33.13	12.63	DSC COMMUNICATIONS	26.63	4.63	21.0
FORE	43.63	10.00	FORE SYSTEMS INC.	15.13	0.19	1.3
GDC	13.63	6.13	GENERAL DATACOMM INDS.	7.56	-0.44	-5.5
GSX	51.31	36.13	GENERAL SIGNAL NETWORKS (H)	51.31	4.69	10.1
GTE	49.38	37.75	GTE CORP.	46.63	0.94	2.1
LU	79.56	30.63	LUCENT TECH. (H)	79.56	4.06	5.4
MADGF	16.13	4.50	MADGE NETWORKS NV	6.13	0.00	0.0
MCIC	43.38	22.38	MCI COMMUNICATIONS CORP. (H)	36.13	-6.25	-14.7
NETM	11.25	2.50	NETMANAGE INC.	3.94	1.03	35.5
NTRX	10.63	1.44	NETRIX CORP.	2.13	0.00	0.0
NCDI	16.25	3.00	NETWORK COMPUTING DEVICES	10.75	-0.50	-4.4
NWK	20.88	11.13	NETWORK EQUIPMENT TECH.	18.06	0.25	1.4
NETG	30.25	11.13	NETWORK GENERAL	13.50	-0.06	-0.5
NN	51.94	20.25	NEWBRIDGE NETWORKS CORP. (H)	51.94	4.69	9.1
NT	100.19	45.00	NORTHERN TELECOM LTD. (H)	100.19	3.69	3.8
NOVL	13.25	6.28	NOVELL INC.	6.88	-0.47	-6.4
NYN	59.88	42.00	NYNEX CORP.	54.56	-3.06	-5.3
OCTL	31.75	13.50	OCTEL COMMUNICATIONS CORP.	24.25	1.06	4.6
ODSI	24.25	9.75	OPTICAL DATA SYSTEMS INC.	13.19	-0.31	-2.3
PCTL	40.38	8.25	PICTURETEL CORP.	9.50	0.13	1.3
PTON	4.25	1.31	PROTEON INC.	1.94	0.25	14.8
RACO	6.38	2.13	RACOTEK INC.	2.31	0.13	5.7
RETX	9.25	3.38	RETX	5.00	0.00	0.0
SBC	62.25	46.00	SBC COMMUNICATIONS (H)	61.38	-0.25	-0.4
SFA	23.50	12.00	SCIENTIFIC ATLANTA INC.	22.75	0.81	3.7
SHVA	85.75	8.25	SHIVA CORP.	11.88	1.13	10.5
FON	52.75	34.50	SPRINT CORP.	50.06	-2.13	-4.1
SMSC	15.25	8.25	STANDARD MICROSYSTEMS CORP.	10.31	0.13	1.2
USW	39.44	27.25	US WEST INC. (H)	38.06	-0.81	-2.1
XIRC	31.13	7.50	XIRCOM	12.44	0.44	3.6
XYLN	59.38	12.38	XYLAN CORP.	16.06	-0.31	-1.9

PCs and Workstations UP 7.47%

AALR	15.50	6.13	ADVANCED LOGIC RESEARCH	15.44	0.06	0.4
AAPL	27.75	13.00	APPLE COMPUTER INC.	14.81	1.13	8.2
ASTA	6.50	3.94	AST RESEARCH INC.	5.16	0.03	0.6
CPQ	123.75	40.50	COMPAQ COMPUTER CORP. (H)	123.56	14.81	13.6
DELL	135.69	20.25	DELL COMPUTER CORP. (H)	135.69	13.31	10.9
GTW	38.06	13.88	GATEWAY 2000 INC. (H)	37.94	5.38	16.5
HWP	60.94	37.75	HEWLETT PACKARD CO.	60.94	4.56	8.1
MUEI	25.38	8.75	MICRON INTERNATIONAL INC.	18.81	1.69	9.9
PNPNY	74.00	49.88	NEC AMERICA	70.63	1.75	2.5
SGI	28.38	12.63	SILICON GRAPHICS	17.94	0.94	5.5
SUNW	39.88	22.00	SUN MICROSYSTEMS INC. (H)	39.31	2.19	5.9

Large Systems UP 4.38%

AMH	14.00	8.13	AMDAHL CORP.	9.88	-0.19	-1.9
DGN	28.44	9.00	DATA GENERAL CORP.	28.44	2.06	7.8
DEC	42.88	25.00	DIGITAL EQUIPMENT CORP.	38.06	1.50	4.1
IBM	96.69	44.63	IBM (H)	96.50	1.63	1.7
MDCD	9.75	2.88	MERIDIAN DATA INC.	4.38	0.06	1.4
NETF	4.38	0.88	NETFRAME	0.94	0.00	0.0
SQNT	23.50	10.50	SEQUENT COMPUTER SYS. (H)	23.50	2.00	9.3
TEXM	3.88	1.88	SEQUOIA SYSTEMS INC.	3.13	-0.25	-7.4
SRA	53.63	16.63	STRATUS COMPUTER INC. (H)	53.63	3.75	7.5
TDM	25.31	8.63	TANDEM COMPUTERS INC. (H)	25.25	3.13	14.1
UIS	8.50	5.38	UNISYS CORP. (H)	8.50	0.88	11.5

Software UP 2.37%

ADBE	49.00	28.50	ADOBE SYSTEMS INC.	36.38	-0.75	-2.0
AMSWA	8.75	3.75	AMERICAN SOFTWARE INC.	8.06	0.50	6.6
APLX	40.00	3.13	APPLIX INC.	7.00	-0.06	-0.9
ARSW	55.50	17.00	ARBOR SOFTWARE	34.50	-0.38	-1.1
ADSK	42.88	18.50	AUTODESK INC. (H)	41.75	3.00	7.7
BGSS	32.50	19.50	BGS SYSTEMS INC.	28.50	-0.50	-1.7
BMSC	58.63	25.38	BMC SOFTWARE INC.	56.63	2.75	5.1
BOOL	27.50	14.00	BOOLE AND BABBAGE	24.50	-1.00	-3.9
BORL	9.13	4.75	BORLAND INT'L INC.	6.06	-0.69	-10.2
BOBJY	30.00	7.13	BUSINESS OBJECTS (L)	8.25	-0.94	-10.2
CAYN	6.88	2.63	CAYENNE SOFTWARE INC. (L)	3.00	-0.25	-7.7
CNTR	5.88	1.13	CENTURA SOFTWARE	2.13	0.06	3.0
COGNF	39.50	18.25	COGNOS INC.	31.63	-1.00	-3.1
CA	67.88	37.25	COMPUTER ASSOCIATES	58.94	1.44	2.5
CVN	10.38	3.13	COMPUTERVISION CORP.	4.25	0.19	4.6
CPWR	50.75	16.13	COMPUWARE CORP.	50.13	3.13	6.6
CSRE	29.25	10.75	COMSHARE INC.	11.75	-0.63	-5.1
COSFF	10.75	5.00	COREL CORP.	6.38	-0.31	-4.7
DWTI	6.63	2.63	DATAWARE TECHNOLOGIES INC.	2.97	0.03	1.1
FILE	36.50	9.50	FILENET CORP.	18.63	2.44	15.1
FRTE	48.50	7.25	FORTE SOFTWARE	11.13	-1.50	-11.9
FTPS	9.50	4.25	FTP SOFTWARE INC.	4.63	0.31	7.2
HUMCF	35.00	22.00	HUMMINGBIRD COMM. LTD.	25.88	-0.38	-1.4
HYSW	26.38	10.50	HYPERION SOFTWARE CORP.	23.94	0.69	3.0
IRIC	16.38	11.00	INFORMATION RESOURCES	15.00	0.75	5.3
IFMX	31.13	6.56	INFORMIX CORP.	9.19	-0.13	-1.3
INGR	12.63	6.25	INTERGRAPH CORP.	8.69	0.19	2.2
LEAF	5.50	0.81	INTERLEAF INC.	2.00	0.25	14.3
ISLI	11.13	6.25	INTERSOFT INC.	10.00	0.75	8.1
INTU	46.25	20.88	INTUIT INC.	24.13	0.00	0.0
TLC	25.75	5.50	LEARNING CO. (THE)	9.13	0.13	1.4
LGWX	12.38	4.13	LOGIC WORKS	7.00	0.75	12.0
MAPS	13.00	7.88	MAPINFO CORP.	11.13	0.63	6.0
MATH	7.63	2.19	MATHSOFT	3.63	0.19	5.5
MCAF	70.00	27.88	McAfee Associates	69.50	2.88	4.3
MENT	15.13	6.50	MENTOR GRAPHICS	8.72	-0.03	-0.4
MIFGY	32.75	9.75	MICRO FOCUS (H)	32.75	2.38	7.8
MGXI	14.25	4.00	MICROGRAFX INC.	6.50	0.13	2.0
MSFT	134.94	53.75	MICROSOFT CORP.	130.81	1.25	1.0
ORCL	53.50	33.25	ORACLE CORP.	52.50	2.75	5.5
PARC	64.25	34.88	PARAMETRIC TECHNOLOGY	45.88	3.88	9.2
PMTQ	5.50	0.88	PARCPLACE SYSTEMS INC.	1.13	0.13	12.5
PSFT	64.25	28.25	PEOPLESOFT (H)	61.50	4.75	8.4
PTEC	19.75	11.00	PHOENIX TECHNOLOGIES	13.13	-0.13	-0.9
PSQL	13.75	5.50	PLATINUM SOFTWARE	11.06	-0.25	-2.2
PLAT	17.88	9.25	PLATINUM TECHNOLOGY	13.19	-0.06	-0.5
PRGS	23.00	12.13	PROGRESS SOFTWARE CORP.	16.50	0.00	0.0
RNBO	22.13	13.75	RAINBOW TECHNOLOGIES INC.	19.63	1.00	5.4
REDB	30.00	5.00	RED BRICK SYSTEMS INC.	8.25	1.63	24.5
SAPE	54.00	29.75	SAPIENT CORP. (H)	53.25	3.75	7.6
SCOC	8.63	3.13	SCO INC.	4.47	0.59	15.3
SDTI	47.63	21.00	SECURITY DYNAMICS TECH.	36.38	0.75	2.1
SOTA	18.88	8.88	STATE OF THE ART	12.25	0.88	7.7
SSW	78.88	27.25	STERLING SOFTWARE INC.	33.06	1.31	4.1

EXCH 52-WEEK RANGE JULY 11 2 PM Wk NET Wk Pct

Internet UP 5.82%

SDRC	28.50	15.00	STRUCT. DYNAMICS RESEARCH (H)	27.88	0.38	1.4
SYBS	21.13	12.13	SYBASE INC.	13.66	1.16	9.3
SYMC	21.25	8.75	SYMANTEC CORP. (H)	20.09	0.66	3.4
SNPS	50.50	21.75	SYNOPSYS	39.81	4.31	12.1
SSAX	15.75	3.88	SYSTEM SOFTWARE ASSOC.	7.19	-0.44	-5.7
SYSP	36.50	7.38	SYSTEMS SOFTWARE CORP.	11.00	0.50	4.8
TRUV	8.00	1.50	TRUEVISION CORP.	1.81	-0.44	-19.4
VIEW	17.00	8.38	VIEWLOGIC SYSTEMS	14.75	-0.13	-0.8
VMRK	11.13	5.50	VMARK SOFTWARE INC.	8.75	0.88	11.1
WALK	15.69	9.38	WALKER INTERACTIVE SYSTEMS (H)	15.13	0.75	5.2
WALL	29.13	12.25	WALL DATA INC.	18.38	-8.63	-31.9
WANG	24.06	15.38	WANG LABORATORIES INC.	22.13	0.31	1.4

Semiconductors UP 7.58%

AMZN	30.00	15.75	AMAZON.COM	28.63	5.69	24.8
AOL	69.38	22.38	AMERICA ON-LINE (H)	69.38	6.88	11.0
BBN	29.38	15.13	BBN CORP.	28.86	-0.06	-0.2
CSRVR	19.50	8.63	COMPUSEIVE CORP.	11.81	1.06	9.9
EDFY	26.25	8.88	EDIFY CORP.	16.00	2.38	17.4
LCOS	22.75	5.75	LYCOS INC.	13.88	1.38	11.0
NETC	25.00	7.88	NETCOM ON-LINE	13.50	-1.38	-9.2
NSCP	65.00	23.50	NETSCAPE COMM. CORP.	39.19	1.75	4.7
OMKT	25.50	6.50	OPEN MARKET INC.	10.94	-1.81	-14.2
PSIX	14.50	5.50	PSINET	8.19	0.19	2.3
QDEK	9.88	2.00	QUARTERDECK CORP.	2.63	0.09	3.7
RAPT	25.75	8.88	RAPTOR SYSTEMS	12.19	0.94	8.3
SCUR	23.25	4.75	SECURE COMPUTING CORP.	5.66	-0.72	-11.3
SPYG	20.50	6.00	SPYGLASS INC.	8.00	-0.38	-4.5
YHOO	45.13	15.50	YAHOO! INC. (H)	44.75	11.25	33.6

How to contact Computerworld

TELEPHONE/FAX

Main phone number (508) 879-0700
All editors unless otherwise noted below
Main fax number (508) 875-8931
24-hour news tip line (508) 820-8555

E-MAIL

Our Web address is www.computerworld.com.
All staff members can be reached via E-mail on the Internet using the form:

firstname_lastname@cw.com.

All IDG News Service correspondents can be reached using the form:

firstname_lastname@idg.com.

LETTERS TO THE EDITOR

Letters to the editor are welcome and should be sent to:

letters@cw.com.

Please include your address and telephone number.

MAIL ADDRESS

PO Box 9171, 500 Old Connecticut Path,
Framingham, Mass. 01701

SUBSCRIPTION/BACK ISSUES

Phone (800) 552-4431
E-mail circulation@cw.com.
Back Issues (508) 820-8129

REPRINTS

Phone Michelle Olk, (800) 217-7874

CONTACTING CW EDITORS

We invite our readers to call or write with comments and ideas. It is best to submit ideas to one of the department editors as well as to the appropriate beat reporter.

Editor Paul Gillin (508) 620-7724
Executive Editor Maryfran Johnson (508) 820-8179

DEPARTMENT EDITORS/NEWS

News Editor Patricia Keefe (508) 820-8183
Sections Editor Kevin Fogarty (508) 820-8246
Assistant News Editor Neal Weinberg (508) 820-8177
Assistant News Editor Mitch Betts (202) 347-6718
Assistant Sections Editor Michael Goldberg (508) 620-7789
Online Editor Johanna Ambrosio (508) 820-8553
Online News Editor Judith H. Bernstein (516) 266-2863

SENIOR EDITORS/NEWS

Groupware, E-mail, messaging Barb Cole-Gomolski (760) 728-8858
LANs, operating systems Laura DiDio (508) 820-8182
Network/systems management Patrick Dryden (817) 924-5485
Application development Sharon Gaudin (508) 820-8122
IS management Thomas Hoffman (201) 587-0090
IS careers Julia King (610) 532-7599
Investigative reports Kim S. Nash (972) 716-9822
Databases Craig Stedman (508) 820-8120
Midrange hardware, Jaikumar Vijayan (508) 820-8220
Unix operating systems
Electronic commerce, Internet Mitch Wagner (415) 548-5513
Internetworking Bob Wallace (508) 820-8214

SENIOR WRITERS/NEWS

Mobile computing, social issues Mindy Blodgett (508) 820-8168
@Computerworld Stewart Deck (508) 820-8155
PCs, servers, net computers April Jacobs (508) 820-8121
Security, government Sharon Machlis (508) 820-8231
Mainframes, high-end storage Tim Ouellette (508) 820-8215

STAFF WRITERS/NEWS

Telecommunications Kim Girard (508) 820-8223
New products, Matt Hamblen (508) 820-8567
multimedia, low-end storage
@Computerworld Patrick Thibodeau (508) 820-8143
Client/server software, Randy Weston (508) 628-4869
Unix apps
@Computerworld Wylie Wong (415) 548-5581

OPINIONS

Columns Editors Kevin Fogarty (508) 820-8246
Michael Goldberg (508) 620-7789
Steve Ulfelder (508) 620-7745
Staff Columnist Frank Hayes (503) 252-0100

DEPARTMENT EDITORS/FEATURES

Technology reviews/ James Connolly (508) 820-8144
Buyer's Guide

SENIOR EDITORS/FEATURES

Buyer's Guide Cathleen Gagne (508) 620-7729
Careers David B. Weldon (508) 820-8166
In Depth Steve Ulfelder (508) 620-7745
Management Robert L. Scheier (508) 628-4931
Managing Allan E. Alter (508) 620-7714
Special reports Gary H. Anthes (202) 347-0134

ASSOCIATE EDITORS/FEATURES

Managing Rick Saia (508) 820-8118
Buyer's Guide Amy Malloy (508) 620-7754

IDG NEWS SERVICE CORRESPONDENTS

Paris bureau chief Jeanette Borzo (33) 1-4904-8001
UK correspondent Kristi Essick (44) 171-416-0701
Hong Kong bureau chief Jon Skillings (852) 2535-4661
Tokyo correspondent Rob Guth (81) 33-358-6122

RESEARCH

Bob Fink, senior research manager (508) 820-8116;
Kevin Burden, senior researcher; Laura Hunt, research analyst; Stefanie McCann, senior graphics coordinator; Mari Keefe, online researcher.

COPY DESK

Ellen Fanning, managing editor (508) 820-8174;
Roberta Fusaro, assistant managing editor; Christina Aicardi Maguire, Jamie Eckle, David Ramel, senior copy editors; Kimberly Blackburn, Michelle Davidson, senior production copy editors; Pat Hyde, Monica Sambataro, Keith Shaw, copy editors; Jeremy Selwyn, online copy editor.

GRAPHIC DESIGN

Tom Monahan, design director (508) 820-8218; Janell Genovese, associate art director/features; Mitchell J. Hayes, associate art director/news; Nancy Kowal, senior graphic designer; Carol Lieb, photo researcher/editor; Amira Harari, David Waugh, Mary Beth Welch, graphic designers; Rich Tennant, John Klossner, cartoonists.

ADMINISTRATIVE SUPPORT

Linda Gorgone, office manager (ext. 8176); Connie Brown (ext. 8178), Lorraine Witzell (ext. 8139); Beliza Veras-Moriarty (ext. 8172); Chris Flanagan, editorial assistants, (415) 548-5563.

COMPUTERWORLD MAGAZINES GROUP

(Includes Premier 100, Campus Edition, Best Places to Work, Leadership Series, Intranet Series, Emmerce and Health Care Journal.)
Alan Alper, editor (508) 820-8115; Mary Brandel, executive editor; Anne McCrory, Catherine McCrory, Joyce Chutchian-Ferranti, managing editors; Kimberlee A. Smith, assistant managing editor and online coordinator; Stephanie Faucher, art director.

@COMPUTERWORLD

@Computerworld is our World Wide Web site. On it, we publish daily news and feature stories that supplement our print coverage. We also have special audio features, such as interviews with industry notables, and the @Computerworld Minute, which is an audio version of the day's top news.

A few times each week, we also have Links listings. These are resources related to online and/or print stories. We also have polls and forums that you must register for to access. The rest of the site is accessible without registering.

Contact: Johanna Ambrosio, Online Editor, (508) 820-8553 or johanna_ambrosio@cw.com.

Companies in this issue

Page number refers to page on which story begins. Company names can also be searched at www.computerworld.com.

1-800-FLOWERS, Inc. 4
3Com Corp. 8,30,47
Aberdeen Group, Inc. 14,24,37
Acer America Corp. 67
Adkins Resource, Inc. 47
Advanced Manufacturing Research, Inc. 41
Advantage KBS, Inc. 37
Aetna U.S. Healthcare 37
AlliedSignal, Inc. 37
Altec Industries, Inc. 67
Amazon.com, Inc. 4
America Online, Inc. 4,24,41
American Electronics Association 30
American International Underwriters Cover 1
American Management Systems 80
American Medical Association 6
AMR Corp. 6
ANS Communications 12
Apple Computer, Inc. Cover 1,55,72
Aramark Corp. 37
Aristotle Publishing, Inc. 3
Arnot Ogden Medical Center 67
Ascent Logic, Inc. 59
Association for Interactive Media 28
Association of Flaming Ford Owners 75
AST Research, Inc. 68,72
AT&T Corp. 75
Ballet Makers, Inc. 14
Banyan Systems, Inc. 47
Bay Networks, Inc. 14
Bechtel Group, Inc. 6
Bernard C. Harris Publishing, Inc. 61
BGS Systems, Inc. 48
BindView Development Corp. 47
Black America's Political Action Committee 41
Blackwell North America, Inc. 59
Boeing Commercial Airplane Group 48
Booz Allen & Hamilton, Inc. 4
Borland International, Inc. 17
British Columbia Telephone Co. 12
Broderbund Software, Inc. 14
Cable News Network 75
California Department of Mental Health 17
Candle Corp. 48
Carl Zeiss Jena GmbH 8
CDSI Holding Corp. 8
Charles Schwab & Co. 6,28
Chubb & Son, Inc. 3
CIMI Corp. 8
Cisco Systems, Inc. 8
Citicorp. 48
Compaq Computer Corp. 1,2,66,67,72
Computer Associates International, Inc. Cover 1,47
Compuware Corp. 48
Consumers Gas Co. 47
Contigo Software 41
Control Data Systems, Inc. 8
Coopers & Lybrand LLP 41
Corel Corp. 14
Cyber Media 2001 Cover 1
CyberSource Corp. 41
Dana Corp. Cover 1
Data General Corp. 12
David Strom, Inc. 47
De Efteling BV Amusement Park 53
Dell Computer Corp. 1,2,66,67,72
Deloitte & Touche Consulting Group 20,80
Delphi Consulting Group, Inc. 41
Detroit Edison Co. 60
Digital Equipment Corp. 8,12,30,68
Digitivity, Inc. 12
Documentum, Inc. 6
Entex Information Services 37
Equifax, Inc. 59
Ernst & Young LLP 28
Excite, Inc. 4
Factory Mutual Engineering Associates 48
Farm Credit Financial Partners, Inc. 40
Federal Express Corp. 41,87
Federal Reserve Bank 98
Federal Sources, Inc. 20
FileNet Corp. 6
Finjan, Inc. 12
First Chicago Mercantile Services LLC 6
First Union National Bank 55
Ford Motor Co. 75
Forrester Research, Inc. 47
Fujitsu Ltd. 8

Gartner Group, Inc. Cover 1,2,4
Gateway 2000, Inc. 6,14,37,98
GE Capital IT Solutions 30
General Automation, Inc. 43
General Electric Co. 75
General Motors Corp. 55
Genicom Corp. 8
Giga Information Group 12,24,59
Harris Corp. 24
HDR Insurance Services LLP Cover 1
Hewlett Associates, Inc. 2
Hewlett-Packard Co. Cover 1,2,8
IBM 2,3,8,14,28,53,55,60,66,67,72
Information Technology Association of America 59
Informix Corp. 55
Informix Software, Inc. 6
Intel Corp. 2,30,47,55
InteliHealth 37
Intelligent Electronics, Inc. 41
Interactive Solutions, Inc. 55
Interlink Electronics 100
International Data Corp. Cover 1
International Shipholding Corp. 8
International Thomson Computer Press 61
Interpose Corp. 61
Intuit, Inc. 8
IsoQuest, Inc. 41
J&H Marsh & McLennan, Inc. 59
J.D. Edwards & Co. 14
JBA International Ltd. 14
Johns Hopkins University and Health System 37
Keane, Inc. 59
Kmart Corp. 75
Landmark Systems Corp. 48
Lawson Software 8
LeBoeuf, Lamb, Greene & MacRae 59
Liberty Integration Software 43
LittleNet LLC 41
Lockheed Martin Corp. Cover 1,4,28

Logic Works, Inc. 53
Los Angeles Times Cover 1
Lotus Development Corp. 47
Lycos, Inc. 4
Macromedia, Inc. 43
Macy's 37
McAfee Associates, Inc. 12
McDonald's Corp. 75
MCI Communications Corp. 28,47,75
MCI Systemhouse 37
Mellon Bank Corp. 37
Meredith Corp. 4
Merisel, Inc. 41
Merrill Lynch & Co. 47
Meta Group, Inc. 53,59
Micon Electronics, Inc. 66,67
Micon Technology, Inc. 72
Microsoft Corp. Cover 1,3,4,6
Middleberg & Associates 75
Millipore Corp. 55
Nabisco, Inc. 24
NASA 28,53
National Council on Compensation Insurance, Inc. 59
National Science Foundation 28
National Semiconductor Corp. Cover 1
NCR Corp. Cover 1,12
NEC Computer Systems 72
Netcom On-Line Communication Services, Inc. 24,41
Netplex Group, Inc. 37,48
Nets, Inc. 4
Netscape Communications Corp. 3,8
Networks Solutions, Inc. 4,28
New Millennium Consulting Group 75
Nikko Research, Inc. 67
Novadigm, Inc. 30
Novell, Inc. 8,17,47
Oracle Corp. 3,8,30,37,48,55
Oregon Department of Human Resources 80
Pacific Bell 37
Pacific Northwest National Laboratory 100
Pacific Software Publishing, Inc. 53
Patricia Seybold Group 98

PeopleSoft, Inc. 14,53
PepsiCo, Inc. 77
Perot Systems Corp. 4,37
Platinum Technology, Inc. 55
PointCast, Inc. 37
PoliTech Research, Inc. 41
The Hearst Corp. 17
Richter Systems, Inc. 37
RSA Data Security, Inc. 41
SAP AG 6,8,14,30,53,55
SAS Institute, Inc. 48
SCH Technologies, Inc. 55
Science Applications International Corp. 28
SCO, Inc. 8
Scopus Technology, Inc. 37
Sears, Roebuck and Co. 75
Security Dynamics Technologies, Inc. 41
SEEC, Inc. 61
Sequent Computer Systems, Inc. 6,55
SES, Inc. 48
Shell Oil Co. 80
Showtime Networks, Inc. 4
Siemens AG 8
Silicon Graphics, Inc. 28
Silknet Software, Inc. 37
Silver Bullet Solutions 60
Smaby Group, Inc. 55
Society for Information Management 61
SoftArc, Inc. 41
Spelling Entertainment Group 10
Standish Group International, Inc. 12
Starbucks Coffee Co. Cover 1
Storage Technology Corp. 2,55
Strategic Research Corp. 55
Summit Strategies, Inc. 67
Sun Microsystems, Inc. Cover 1
SupportNet Consulting, Inc. 28
Sutmyrn Storage Corp. 2
Sybase, Inc. 55,80
Symantec Corp. 17
Tactical Strategy Group, Inc. 60
Tandem Computer Corp. Cover 1,12
Target Marketing 14
Tech Data Corp. 41

TechTeach International, Inc. 47
TeleChoice, Inc. 8
Texaco, Inc. 77
Texas Guaranteed Student Loan Corp. 3
Textware Solutions 54
The Gillette Co. 80
The Hearst Corp. 17
The Information Management Forum 59
The New York Times 28,75
The Prudential Insurance Company of America 77
The Travelers 80
The Yankee Group 37
Ticketmaster Corp. 4
Tivoli Systems, Inc. Cover 1,48,98
Tommy Hilfiger Corp. 75
Toshiba America Information Systems, Inc. 72
Toshiba America, Inc. 66
TRW, Inc. Cover 1
U.S. Department of Commerce 28
U.S. Department of Defense 41
U.S. Department of Justice 28
U.S. Robotics 30
Unify Corp. 48
Unison Software, Inc. Cover 1
United Services Automobile Association 2
UUNET Technologies, Inc. 41
Vantive Corp. 37
Viasoft, Inc. 59
Virtual Emporium 4
VJ Infosystems Ltd. 61
VLSI Technology, Inc. 12
Wal-Mart Stores, Inc. 75
Walt Disney Co. 4,75
Wasserstein Perella Group Cover 1
Welsh, Carson, Anderson and Stowe 8
Wheeling Pittsburgh Steel Corp. 61
William D. Harris & Associates 41
Wind River Systems, Inc. 28
Wohl Associates 41
Workgroup Strategic Services, Inc. 2,67
Yahoo, Inc. 4,30
Zona Research, Inc. 3
Zoomit Corp. 47

CA to give away management tool

CONTINUED FROM COVER 1

Unicenter TNG (The Next Generation) is a closed, all-inclusive enterprise management suite.

CA hopes to attract users and developers to the product and set a de facto standard by giving away its core functions and a snazzy interface. If the free framework approach succeeds,

tools with Unicenter TNG.

Even so, other analysts said they doubt that CA or its competitors will succeed any time soon in moving users on to enterprisewide management products, mostly because of training, complexity and cost issues.

The strategy calls for CA and at least a dozen server vendors

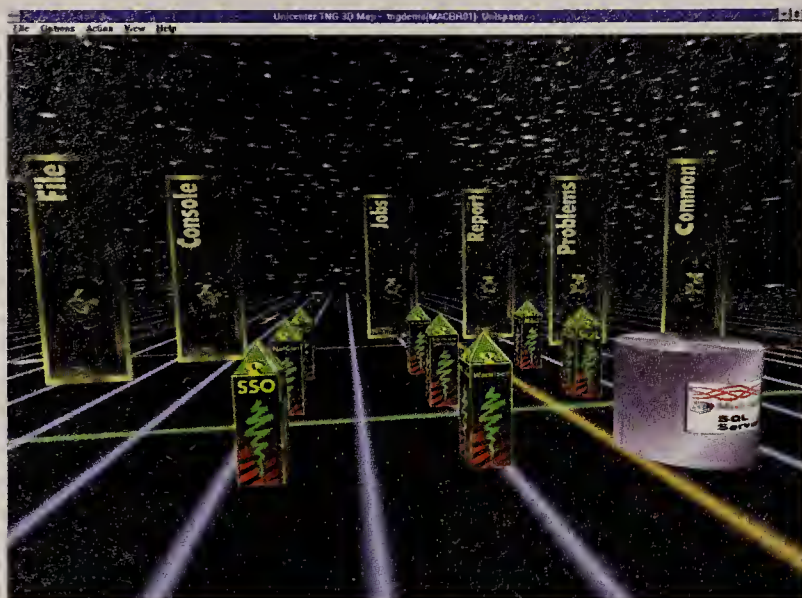
ROMs will give users the Unicenter TNG Framework. That set of underlying management engines recognizes devices across networks, tracks events, schedules tasks and delivers reports — all controlled by a two- or three-dimensional or World Wide Web interface.

"It's a surprise move, like the sacrifice throw in judo that catches opponents off guard," said an analyst who was briefed on the CA announcement and who requested anonymity. "Users will ask why they should spend hundreds of thousands of dollars on other management frameworks [such as OpenView from Hewlett-Packard Co. or TME 10 from Tivoli Systems, Inc., for example] when this one is free."

DOMINO EFFECT

Through widespread availability of these building blocks, CA expects to speed adoption of the integrated Unicenter TNG tools for software distribution, security, help desk and other functions. And if CA succeeds in gaining user attention, other tool vendors will be forced to make their products integrate with Unicenter TNG, analysts said.

"Instead of joint back-scratch-



The Unicenter TNG Framework includes a 3-D interface to networked systems and applications

users can buy management-ready servers from diverse hardware vendors.

And users can expect software vendors to be able to integrate, for the first time, their favorite

at CA-World '97 in New Orleans to announce plans to give away seven key parts of Unicenter TNG, according to users and industry analysts.

Popular servers and free CD-

Uphill battle for users

Some analysts remain skeptical that CA's bid and serious efforts by enterprise management rivals HP and Tivoli will have much impact on users.

"I don't see anyone becoming a leader any time soon," said Sue Aldrich, management analyst at Patricia Seybold Group in Boston. "Everyone talks about wanting enterprise management, but nobody really is doing it."

Even though these end-to-end management tool kits promise a payoff in efficiency, they are too hard to implement for a combination of reasons, said Ray Paquet, a research director at Gartner Group, Inc. in Stamford, Conn.

The "uphill battle" starts with a demand for new skills, management processes and organizational changes, Paquet said. Then a budget boost for training, more parts and staged rollout is required to get over the top before users can enjoy the benefits of the downhill slide, he said. — Patrick Dryden

ing, you'll see real partnerships develop now between CA and the platform and software vendors," said another analyst who was briefed.

For example, Unison Software, Inc. in Santa Clara, Calif., will announce a version of Maestro, a tool for scheduling tasks throughout distributed environments, that will take advantage of the Unicenter TNG Framework.

Unison officials said a mutual banking customer sought integration of Maestro with Unicenter TNG to replace the suite's built-in scheduler.

Officials at CA, in Islandia, N.Y., declined to comment on specific announcements.

"This sounds like a good

move, because it will make Unicenter TNG easier to deploy. And that means we'll benefit from it a lot sooner," said Mike Altiero, manager of network services at American International Underwriters in Livingston, N.J.

The insurance underwriter is coordinating support staff at 26 sites worldwide to install agent software for Unicenter TNG. "We'd like to save that effort by having the basic pieces ship on servers," Altiero said.

For example, NCR Corp. recently announced plans to include Unicenter TNG on its servers.

Analysts predicted that other systems vendors will follow suit this week, including HP and Sun Microsystems, Inc. □

Windows 95 users to get an NT nudge

CONTINUED FROM COVER 1

we'll upgrade on an as-needed basis and no faster," said Deborah Gillotti, chief information officer at Starbucks Coffee Co. in Seattle.

Microsoft is under no illusion that a migration to NT Workstation — which currently has an installed base of about 6 million users — will be even remotely fast.

Fully 90% of its operating system shipments are still Windows 95, and Microsoft doesn't expect that figure to change much throughout next year, said Jonathan Roberts, director of product management for Windows 95 and NT Workstation.

"We will always continue to support Windows 95 and Windows 98," Microsoft's forthcoming upgrade to Windows 95,

Roberts said. "It is not Microsoft's strategy to force anyone to upgrade. Corporate edicts like that never work, and users will always do what they want."

ATTRACTIVE FEATURES

Instead, Microsoft plans to adopt the carrot instead of the stick in its bid to drive the crossover from Windows 95 and the forthcoming Memphis — the code name for Windows 98 — to NT Workstation, he said.

It will do so with a series of initiatives. Those lures will include a slew of management tools that are slated to be available when the operating system ships.

Microsoft also will offer an updated, nominally priced Windows NT 5.0 Resource Kit to

ease the upgrade and as-yet-unspecified "seeding programs" that likely will feature discount pricing and technical support promotions, Roberts said.

Users said Microsoft must deliver crucial functionality such as power management capabilities to support remote Windows NT laptop users.

They said the company also must deliver support for The

"The major obstacle [to migrating to NT Workstation] for our 7,000 users is that the majority of the software packages we use still run only on Win 95."

**— J. Briscoe Stephens,
NASA's Marshall Space Flight Center**

Microsoft Network on Version 5.0 to successfully encourage evaluations.

According to Mike Gartenberg, an analyst at Gartner Group, Inc. in Stamford, Conn., NT Workstation implementations are still 32% to 47% more expensive than Windows 95, based on the cost of upgrading hardware and other nonhardware issues such as support and maintenance.

But because the price of hardware has plummeted in the past 18 months, cost is no longer the major impediment to up-

grading, according to users.

"The smoothest desktop path for corporate users is still Windows 95 to Windows 98," Gartenberg explained. Migration to Windows

NT Workstation at this point in time is not warranted or justified, he said.

"Right now, it takes an entire day to upgrade one notebook user from Windows 95 to NT Workstation and about five hours to upgrade a Windows 95 desktop PC to NT Workstation," explained Jeff Dazell, LAN administrator for network services at Dana Corp. in Toledo, Ohio.

"We're waiting for Windows NT 5.0 to fill these gaping holes before we convert our desktops. I want a smooth migration," Dazell said.

J. Briscoe Stephens, advanced scientific systems coordinator at NASA's Marshall Space Flight Center in Huntsville, Ala., agreed.

"The major obstacle [to migrating to NT Workstation] for our 7,000 users is that the majority of the software packages we use still run only on Win 95," he said. □



COMMENTARY

What do Mars and Washington have in common?

David Coursey

At first glance, the recent Supreme Court decision gutting the Communications Decency Act (CDA) would appear to have nothing in common with the Mars landing a week later. But actually, a little car rolling around on the red planet did an excellent job of proving from more than 90 million miles away that the Supreme Court justices just don't get it.

From the start, I was amazed at the Internet community's hand-wringing over the Exon/Coats Communications Decency Act, which was enacted as part of the Telecommunications Deregulation and Reform Act of 1996. Internet types just didn't seem to get the political gamesmanship surrounding the bill.

Given the lip service Washington pays to "family values," it should have been obvious that supporting the act was a no-lose proposition for congressmen. Sure, the American Civil Liberties Union would be upset, as would the politically inert 'netizenry, but that would be about as far as the wailing would go.

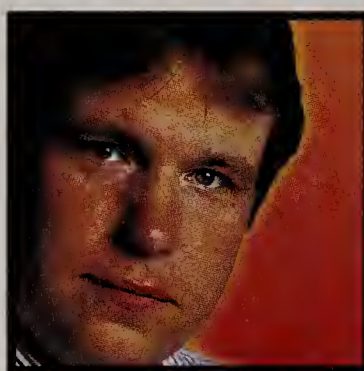
Keeping porn away from kiddies (and kiddie porn away from everyone) provided plenty of political cover, and the bill easily became law. Even lawmakers who were against the censorship aspects of the CDA could vote for it — safe in the knowledge that the high court would undo the damage. Supporting the act was an easy decision for a politician.

Right on schedule, the Supreme Court

upheld a lower court's ruling that the CDA blocks free speech and thus violates the First Amendment. It's dead. Drop the gavel. Game over.

MARTIAN MANIA

I take you now from Washington to Mars (not as big a leap as it may seem), where a spacecraft bounces 50 feet upon landing, eventually settling down to send us pictures of the martian rocks and sand. Pathfinder was, and is, Page One news all over the world.



And all this martian mania is fueled in part by the Internet. How many million hits will NASA's Web site see? Will it be a billion before things calm down? Perhaps. What we have here is the first major event that millions of people have shared over the Internet. As television fades from

center stage, the Web is sidling up to take TV's place as our nation's No. 1 source of shared experience. In the future, something won't have happened if it hasn't

happened on the Internet.

Which returns us to nine people who aren't Internet-literate yet get to make all the big decisions.

In striking down the CDA, the Supreme Court rejected an argument that the Internet is like television or radio, both of which face limitations on what can be broadcast. No, the justices decided, the 'net is like person-to-person conversation and deserves full free speech protection as such. The truth is, the Internet is *both* these things, but the duality isn't so obvious that the justices could make the distinction.

Maybe next time someone tries to regulate the Internet (which I think is an absolute necessity), the lawyers will understand its true nature — that the 'net is both a personal communications *and* a broadcast medium — and regulate each accordingly. Let's stop using the Internet as a way to win political points and find some way to reasonably protect both free speech and our society. □

Coursey, an analyst and consultant, is editor of "coursey.com," an online newsletter available at www.coursey.com. His E-mail address is david@coursey.com.

Year 2000: Business executives catch the fever

Frank Hayes

The woman on the telephone was amazingly cheerful, considering our gloom-and-doom topic was the year 2000 problem. She said her company's project to fix the millennium bug might slip its schedule a little. But except for one major system, everything should be done by the end of December.

That's December of *this* year. No wonder she was cheerful.

There wasn't any magic involved in that insurance company's year 2000 fix. Those folks didn't acquire a cutting-edge mechanical mangler to fix their code or depend on some guru with a mystical sense for what needed to be fixed.

Nope. They just analyzed the problem, budgeted the project and did the work.

Oh, yeah — they started more than a year ago.

The year 2000 problem isn't hard to fix. All you need is time. You find each place that makes reference to a year. You make sure that reference won't cause a problem when 1999 rolls over to 2000. Then you go on to the next reference. And repeat. Ad nauseam.

As a technical problem, that sounds mind-numbingly, lobotomizingly dull. Who would choose to come in to work, day after day, to crank through another pile of date fixes? Not the best and the brightest. Not even the dumb and the dullest.

As a project, the year 2000 fix makes a great career swamp for IS managers. It's hugely expensive. It will take months (if you're lucky) or even years. It adds no significant value to the business (well, except survival). It isn't going to excite users or make the CIO look good in front of the board.



So it isn't exactly a mystery that IS shops have a hard time unearthing year 2000 champions.

Compare that to the year 2000 business problem: If your company fixes its millennium bugs, it may gain big financial benefits. If not, the company dies.

The financial guys have figured this out. That's why year 2000 expenses are showing up as a line item in corporate financial statements.

I'm not talking about software vendors that sell year 2000 tools. These are banks, manufacturers and insurance companies that understand that dealing with the year 2000 problem is a business advantage right now.

Investors are likely to prefer companies that

won't involuntarily self-destruct on Jan. 1, 2000. That means a company's year 2000 work is very interesting stuff in the financial world.

Result: If they don't have it already, your top management will soon be screaming for their own year 2000 line item for the annual report.

That's the same top management that couldn't be bothered six months or a year ago. The same board that wanted to find a scapegoat to blame for the problem, and a silver bullet — or preferably a cheap, silver-plated bullet — to fix it.

Is that stupid? Sure. Does the IS staff resent it? Probably.

But reality is that a combination of an uninteresting problem, zero-profit project and clueless executive team has allowed the year 2000 to grow from a nuisance to a catastrophe in the making.

Yes, it should have been started a year — or more — ago. It should have been done as part of other projects. It should have had full management support and a proper budget. You should have been able to talk cheerfully about your year 2000 project.

None of that happened. That stinks. But you've got to fix the millennium bug anyway.

While you're at it, puzzle over that disconnect between technical nonissue and business crisis. Otherwise, it will give you grief long after 2000 is gone. □

Hayes is Computerworld's staff columnist. His Internet address is frank_hayes@cw.com.

The Back Page

alt.cw

Dispatches & images from the fringes of the electronic frontier

WIRELESS KEYBOARD FOR LAID-BACK BROWSING

Interlink Electronics in Camarillo, Calif., has introduced a sleek input device for what it calls the relaxed, "sit back and browse" style of computing. The VersaPoint Wireless Keyboard (\$160) combines an 81-key keyboard with a touch pad for Internet browsing and electronic messaging. It uses an infrared link with a range of up to 50 feet.



Usenet forums

The following are recent Usenet newsgroup discussion threads found on the Internet. You may be able to pick up the thread by entering keywords at the search engine www.dejanews.com.

- History of the C prompt (alt.folklore.computers)
- What makes OOP good? (comp.object)
- The work environment and programmer productivity (comp.software-eng)
- Your first word processor (alt.folklore.computers)
- Traveling with laptop: What about customs? (comp.sys.laptops)
- The negative effect of CASE tools (comp.programming)
- Monitoring suspicious "root" activity (comp.security.misc)

New Age titles

Vice president of technology facilitation
Year 2000 project librarian

Director of knowledge management and consumer insights

Assistant vice president of information quality

Director of intellectual capital

Telemedicine for M*A*S*H units

Hawkeye Pierce never had it so good. The Pacific Northwest National Laboratory in Richland, Wash., and U.S. Army researchers have developed a portable medical device that takes ultrasound images of wounded soldiers at battlefield hospitals. The images can be transmitted via the Internet for diagnosis and analysis by medical experts elsewhere. The system was designed to analyze internal bleeding and puncture wounds, but the same technology could be used by rural hospitals and rescuers in remote locations.



Inside Lines

Hard to swallow

A top Microsoft Windows NT security expert treated several well-known NT hackers to dinner during last week's Black Hat Briefings security conference in Las Vegas. One of the wine-and-dined hackers reports that the meal didn't result in a truce as much as a gentlemen's agreement. The hackers said they'll notify Microsoft first before going public with any security holes. In return, they want public credit for their discoveries. So the way to a hacker's heart is through the stomach, after all.

Egads! Zoinks!

Branding is everything in this industry. So to better attract attention to its line of storage networking hubs, Gadzoox Microsystems in San Jose, Calif., decided on a name change. Ready for this? The firm will now go by Gadzoox Networks. The change from "microsystems" to "networks" is bound to rock the industry and catch the eye because the rest of the name is so run-of-the-mill, right? Well, it worked to some degree: Hard-drive market leader Seagate Technology invested \$10 million in Gadzoox.

Deja vu all over again

Some refugees from Lotus are trying to replicate the success of Notes on the Web. Instinctive Technologies, a Cambridge, Mass., start-up headed by two former Lotus executives, next week will launch ERoom, Internet-based collaboration software. Instinctive is headed by Jeffrey Beir, a former senior vice president at Lotus' applications division, and Pito Salas, former director of technology at Lotus.

Universal no more

The database battle of the Universal Servers ended not with a bang, but a whimper — from a marketing standpoint, anyway. Both Oracle and Informix had laid claim to Universal Server as a product name for their multimedia-enabled databases. But after settling a lawsuit against Informix earlier this year, Oracle has now dropped the term and now refers to its databases as lowercase "universal data servers." Oracle "just sort of got outmaneuvered," said one bemused database analyst.

SAP help coming ASAP

After finally implementing SAP R/3 applications, users have discovered they need better tools to manage the business-critical software. More help is on the way next month. Candle Corp. in Santa Monica, Calif., is preparing an option for its Candle Command Center that simplifies R/3 monitoring and maintenance, according to one analyst's preview. And start-up Envive Corp. in Palo Alto, Calif., will launch Inspector, a performance-analysis tool co-developed with SAP authors.

The language of politics

Microsoft had to recall a shipment of CD-ROMs to the United Arab Emirates after someone complained that labels for the Arabic-language version of Microsoft Office were written in Hebrew. Microsoft is investigating the flub by a contractor.

Platinum Software last week filed suit against Platinum Technology, claiming Platinum Technology's product branding, Internet domain name and marketing material may confuse "potential customers, business partners, industry and financial analysts and others." Because Platinum Software deals with client/server financial accounting software and Platinum Technology with database and systems management software, we would hope analysts and business partners could tell the difference. But considering Platinum Software's financial woes vs. Platinum Technology's success, the company may want to bag the lawsuit and ride the name confusion to renewed profits. We don't care what your name is, if you have a news tip, contact news editor Patricia Keefe at (508) 820-8183 or patricia_keefe@cw.com.

Remember when owning a strategic network didn't have to cost you the world? We do.



No-Risk Networks from Cabletron. A simpler way to work.

At the risk of sounding too boastful, Cabletron's networks greatly reduce the cost of ownership across the board through:

- **Proven investment protection**

Cabletron provides hardware and software solutions that continue to keep pace with changing demands without forcing you into costly infrastructure upgrades. For instance, our MMAC switching platform—introduced more than ten years ago—is still being relied on in thousands of customer sites because it was designed to accommodate new technologies. And today, our SmartSwitching platforms not only continue this tradition by featuring built-in support for Fast Ethernet and ATM, but pave the way for newer technologies such as Gigabit Ethernet.

- **Tightly integrated solutions**

Our own leading-edge technology, combined with strategic partnerships and acquisitions, results in an ever-expanding, standards-based product line that excels in all environments—including today's mixed topology, multivendor networks.

- **Maximum uptime, increased productivity**

Cabletron's fault-tolerant hardware and management software work together to prevent lengthy network outages, automatically.

- **High-speed, easy-to-use features**

Through advanced, value-add features like plug-n-play operation; dedicated bandwidth per user; and adds and moves without changes, Cabletron's solutions immediately improve network performance and reduce day-to-day expenses.

- **Greater control of resources**

Only Cabletron has the policy-based management and user-accountability features to gauge and streamline network costs. Now organizations can determine how valuable resources are utilized to better plan the long-term direction of the enterprise.

Now's the time to gain an upper hand in the battle to overcome your cost-of-ownership issues. Call 603-337-0930 for more information or visit us on the Web at www.cabletron.com.

CABLETRON SYSTEMS

The Complete Networking Solution™

New York Stock Exchange—Listed (CS)

RISK® is a trademark of Hasbro, Inc. © 1997 Hasbro, Inc. All Rights Reserved. Used with Permission.

WHAT DO YOU GET WHEN YOU
COMBINE
THE WORLD'S MOST POWERFUL
OPERATING SYSTEMS
WITH THE WORLD'S MOST RELIABLE
MEMORY?
COMPUTING
WITHOUT LIMITS.



This year more people will install Windows 95 and Windows NT as their operating systems than any other software.

THE INTERNET, multimedia, spreadsheets, and graphics. They're enough to give you an insatiable need for performance. Fortunately, there's an ingeniously efficient way to satisfy it. Combine Microsoft® Windows® 95 or Windows NT® with generous amounts of Kingston® memory. Both powerful operating systems are windows to a more inspired kind of computing. You can retrieve data from the Internet, crunch numbers in your spreadsheets, and write a presentation – all at the same time. Of course, memory



www.kingston.com/ad

is the magic that helps make it all happen. Research shows that

upgrading to 64MB of memory will boost system performance by as much as 63%*. According to Gartner Group, "Budget dollars may be better spent on memory, generally a more critical system resource than processors..."† To upgrade any existing system, start with a quick visit to our Web site at www.kingston.com/ad. Or call your preferred reseller. Or just call us toll-free at (800) 259-8963. Your limits are the only thing you have to lose.



Microsoft®
Kingston®
TECHNOLOGY

COMPUTING WITHOUT LIMITS.™



*Upgrade from 16MB to 64MB on Pentium® Pro 200 MHz. Testing was conducted by an independent service for Samsung Semiconductor, Inc. † Gartner Group Continuous Services, Research Note, 7/18/96. Kingston Technology Company, 17600 Newhope Street, Fountain Valley, CA 92708, (714) 435-2600, Fax (714) 435-2699. ©1997 Kingston Technology Company. All rights reserved. Computing Without Limits is a trademark of Kingston Technology Company. All other trademarks and registered trademarks are the property of their respective owners.